CONSTRUCTION NEWS

PROPOSALS

For proposals Advertised see the pages immediately following the "Construction News" Section.

WATERWORKS

Bids Close		See Eng. News-Record
July 3	St. Paul, Minn.	June 29
July 3	Waubay, S. D.	June 15
July 3	Euclid, O.	June 22
July 3	Charleston, S. C.	June 22
July 5	Reading, Pa.	June 22
July 6	Memphis, Tenn. Adv. June 22 and 29.	June 22
July 6	Memphis, Tenn.	June 15
July 6	Grand Rapids, Mich.	June 29
July 10	Harrold, S. D.	June 22
July 11	New York, N. Y. Adv. June 22 and 29.	June 22
July 11	Benton, Wis.	June 22
July 11	Buffalo, N. Y. Adv. June 22 and 29.	June 22
July 12	Vero, Fla. Adv. June 29.	June 29
July 18	Gillett, Ark. Adv. June 29.	June 29
July 18	Wilmington, N. C. Adv. June 29.	June 29
July 18	Fayetteville, Tenn.	June 29
July 19	Saugerties, N. Y. Adv. June 29.	June 29

SEWERS

July 3	Charleston, S. C.	June 22
July 3	Euclid, O.	June 22
July 5	Sharon, Pa.	June 29
July 6	Winter Haven, Fla.	June 8
July 7	Menominee, Mich.	June 22
July 7	Graceville, Minn.	June 22
July 7	Geneva, O. Adv. June 22 and 29.	June 29
July 8	Elma, Ont.	June 29
July 10	Eustis, Fla.	June 15
July 10	Lebanon, Tenn. Adv. June 29.	June 29
July 13	Thiells, N. Y.	June 22
July 17	Barnum, Minn.	June 29
July 18	Lake Forest, Ill.	June 15
July 18	Newark, N. J. Adv. June 29.	June 29
July 19	Camden, N. J.	June 22
July 24	Hackensack, N. J. Adv. June 29.	June 29

WASTE DISPOSAL

July 18	New Kensington, Pa.	June 29
July 25	Buffalo, N. Y. Adv. June 22 and 29.	June 22

BRIDGES

July 1	Georgia	June 29
July 5	Sturgis, S. D.	May 18
July 5	West Palm Beach, Fla. Adv. June 22 and 29.	June 22
July 5	Long Island City, N. Y.	June 29
July 5	Ft. Morgan, Col.	June 29
July 6	Riverview, Md. Adv. June 15 to 29.	June 15
July 6	Salinas, Cal.	June 22
July 6	Iowa Falls, Ia.	June 29
July 6	Washington, Ia.	June 29
July 7	Hewitville (Potsdam P. O.), N. Y.	June 29
July 8	Salem, N. J. Adv. June 22 and 29.	June 22
July 11	Williamsport, Pa.	June 15
July 11	Central Ferry (Penawawa P. O.), Wash. Adv. June 15 to 29.	June 15
July 14	Tennessee	June 22
July 19	Alabama	June 29
July 20	Alabama	June 29
Aug. 4	Seattle, Wash. Adv. June 29.	June 29
Oct. 31	Sydney, Australia	Jan. 12

EXCAVATION AND DREDGING

July 7	Waseca, Minn.	June 22
July 7	Redwood Falls, Minn.	June 29
July 7	Shawano, Wis.	June 29
July 8	New Bern, N. C.	June 8
July 8	Redwood Falls, Minn.	June 29
July 8	Albert Lea, Minn.	June 29
July 10	Austin, Minn.	June 29
July 25	Brooklyn, N. Y. Adv. June 29.	June 29

STREETS AND ROADS

July 3	Graham, N. C.	June 22
July 3	Euclid, O.	June 22
July 3	White Plains, N. Y.	June 22
July 3	Windber, Pa.	June 22
July 3	California	June 22
July 3	Colfax, Wash.	June 22
July 3	Lilly, Pa.	June 29
July 3	Lodi, Cal.	June 29
July 3	Yreka, Cal.	June 29
July 3	Atlanta, Ga.	June 29
July 3	Bradford, Pa.	June 29
July 3	Des Moines, Ia.	June 29
July 5	Ridgefield Park, N. J. Adv. June 15 to 29.	June 15
July 5	Maryland Adv. June 22 and 29.	June 22
July 5	Hutchinson, Kan.	June 22
July 5	Michigan	June 22
July 5	Long Island City, N. Y.	June 29
July 5	New York, N. Y.	June 29
July 5	Reading, Pa. Adv. June 29.	June 29
July 5	Louisiana	June 29
July 5	Akron, O.	June 29
July 5	Oroville, Cal.	June 29
July 6	New York, N. Y.	June 29
July 6	Fairmont, W. Va.	June 22
July 6	Winter Haven, Fla.	June 8
July 6	San Luis Obispo, Cal.	June 22
July 6	Yuba City, Cal.	June 22
July 6	Michigan	June 22
July 6	Washington, Pa.	June 22
July 6	Wisconsin	June 29
July 7	Troy, Kan.	June 15
July 7	Doniphan, Kan.	June 22
July 7	Tuckerton, N. J. Adv. June 15 to 29.	June 22
July 7	Barnegat, N. J. Adv. June 15 to 29.	June 22
July 7	Menominee, Mich.	June 22
July 7	Ontario	June 22
July 7	Michigan	June 22
July 7	Quebec	June 29
July 7	Colorado	June 29
July 7	Clinton, Ia.	June 29
July 8	Quebec	June 22
July 10	Eustis, Fla.	June 15
July 10	Los Angeles, Cal.	June 22
July 10	Duluth, Minn.	June 22
July 10	Faribault, Minn.	June 22
July 10	Elk River, Minn.	June 29
July 10	California	June 29
July 11	West Virginia Adv. June 22 and 29.	June 22
July 11	Michigan	June 22
July 11	Newton, N. J. Adv. June 22 and 29.	June 29
July 11	New York Adv. June 29.	June 29
July 11	Quebec	June 29
July 11	Covington, Va. Adv. June 29.	June 29
July 11	Louisiana	June 29
July 11	Michigan	June 29
July 12	Michigan	June 22
July 12	Gonzales, Tex	June 22
July 12	Mays Landing, N. J. Adv. June 29.	June 29
July 12	Camden, N. J. Adv. June 29.	June 29
July 12	Michigan	June 29
July 13	Somerville, N. J. Adv. June 29.	June 29
July 14	Belvidere, N. J. Adv. June 22 and 29.	June 22
July 14	Somerville, N. J. Adv. June 22 and 29.	June 29
July 14	Ann Arbor, Mich. Adv. June 29.	June 29
July 14	Tennessee	June 29
July 14	New Jersey Adv. June 29.	June 29
July 17	California	June 29
July 18	Quincy, Fla.	June 22
July 18	Moundsville, W. Va.	June 29
July 18	South Carolina	June 29
July 19	Alabama	June 29
July 19	Michigan	June 29
July 21	Portland, Me. Adv. June 29.	June 29
July 22	Palatka, Fla.	June 29
July 25	Syracuse, N. Y. Adv. June 29.	June 29

INDUSTRIAL WORK

July 3	Gainesville, Fla.	June 29
July 5	Cleveland, O.	June 22
July 5	Cleveland, O.	June 29
July 15	Winston-Salem, N. C.	June 22
July 18	Quincy, Fla.	June 22
July 28	Homestead, Fla. Adv. June 29.	June 29

BUILDINGS

June 30	Nashville, Tenn.	June 29
July 3	Cleveland, O.	June 15
July 3	Charlotte, N. C.	June 29
July 5	Charlotte, N. C.	June 22
July 5	Haverstraw, N. Y.	June 22
July 5	New York, N. Y.	June 22
July 5	Lansing, Mich.	June 22
July 5	New York, N. Y.	June 29
July 5	East Lansing, Mich.	June 29
July 6	Maquoketa, Ia.	June 15
July 6	Grafton, N. D.	June 15
July 6	International Falls, Minn.	June 22
July 6	New York, N. Y.	June 29
July 6	Buffalo, N. Y.	June 29
July 6	Phila., Pa.	June 29
July 7	Flagstaff, Ariz.	June 22
July 7	Grand Rapids, Minn.	June 22
July 10	Albany, N. Y.	June 8
July 10	Ft. Madison, Ia.	June 22
July 10	McKeesport, Pa.	June 22
July 10	Newark, N. J.	June 29
July 10	Janesville, Wis.	June 29
July 10	Schofield, Wis.	June 29
July 10	Plymouth, Mich.	June 29
July 11	Montclair, N. J.	June 22
July 11	Ashland, Wis.	June 29
July 12	Colorado Springs, Col.	June 22
July 13	Dayton, O.	June 29
July 15	Hookerton, N. C.	June 29
July 15	Houghton, Mich.	June 29
July 17	Urbana, Ill. Adv. June 15 to 29.	June 15
July 17	Rock Rapids, Ia.	June 22
July 17	Syracuse, N. Y.	June 29
July 17	Fargo, N. D.	June 29
July 30	Westwood, N. J.	June 22

FEDERAL GOVERNMENT WORK

July 3	Hangars, etc.—Pittsburgh, Pa.	June 15
July 3	Parcel Post Room, etc. — Crookston, Minn.	June 8
July 3	Foundations — Northampton, Mass. Adv. June 29.	June 29
July 5	Grilles—Augusta, Ga.	June 22
July 5	Equipment—San Francisco, Cal.	June 29
July 7	Dredging—Baltimore, Md.	June 8
July 10	Post Office, etc.—Apalachicola, Fla.	June 15
July 10	Boiler House, etc.—Rantoul, Ill. Adv. June 22 and 29.	June 22
July 11	Post Office—Gilmer, Tex.	June 15
July 12	Extension to Workroom, etc. —Albert Lea, Minn.	June 29
July 14	Alterations—Lowell, Mass.	June 29
July 17	Metal Work — Louisville, Ky. Adv. June 22 and 29.	June 22
July 17	Rubble Mound — Ashtabula Harbor, O. Adv. June 22 and 29.	June 22
July 17	Conduit—Wash., D. C. Adv. June 22 and 29.	June 22
July 17	Steel Ladder, etc. — New Orleans, La. Adv. June 22 and 29.	June 22
July 18	Piling—Louisville, Ky. Adv. June 22 and 29.	June 22
July 18	Fire Alarm System—Tuskegee, Ala.	June 29
July 19	Steel Hull — Pittsburgh, Pa. Adv. June 22 and 29.	June 22
July 19	Cornice, etc. — Oswego, N. Y. Adv. June 29.	June 29
July 20	Mailing Shed — Sheboygan, Wis. Adv. June 29.	June 29
Aug. 2	Dredges—Wash., D. C. Adv. June 15 to 29.	June 15
Aug. 2	Ordnance Buildings, etc.— Pearl Harbor, H. T.	June 15

MISCELLANEOUS

July 3	Dump Truck, etc. — Akron, O.	June 29
July 5	Ornamental Lights — Long Branch, N. J. Adv. June 29.	June 29
July 5	Oil Engine, Generator, etc.— Sarasota, Fla.	June 29
July 5	Barge—Quebec, Que.	June 29
July 6	Subway—Michigan	June 29
July 6	Wharf—Grosse Ile, Que.	June 29
July 6	Bituminous Road Surfacing Material—New York, N. Y.	June 29
July 7	Timber, etc. — Peekskill, N. Y. Adv. June 29.	June 29
July 7	Electric Traveling Crane — Milwaukee, Wis.	June 29
July 8	Steam and Water Piping — Starkville, Miss.	June 29
July 10	Turbines, etc. — Cohoes, N. Y. Adv. June 29.	June 29

Bids Close		See Eng. News-Record
July 17	Heating, Ventilating, etc. — Urbana, Ill. ..... Adv. June 22 and 29.	June 22
July 18	Pier Sheds, etc.—Portland, Me. ..... Adv. June 22 and 29.	June 22
July 19	Turbine and Accessories — New Orleans, La. ..... Adv. May 18 to June 29.	May 18
July 19	Engine-Generator Unit—Belhaven, N. C.	June 29
Aug. 15	Hydro-electric Development—Dothan, Ala. ..... Adv. June 22 and 29.	July 29

Where name of official is not given inquiries should be addressed to City Clerk, County Clerk or corresponding official.

Waterworks

PROPOSED WORK

Mass., West Rutland—See "Buildings."

Conn., Manchester—Manchester Water Co. having sketches made new rein.-con. dam with 22 ft. spillway, concrete retaining walls. To exceed $25,000. J. F. Bowen, Manchester, engr.

Conn., Berlin—Having plans prepared 3½ mi. extension to water supply system in Hudson St., Farmington Ave., Middletown Rd. and Worthington Bridge sections. Oldershaw & Crowley, 259 Main St., New Britain, engrs.

N. Y., East Syracuse—Plans new reservoir at Wright Brook, 1 mi. west of Jamesville, 1,000,000 gal. capacity, concrete spillway and wall, 4,500 yd. concrete and 30,000 cu.yd. earth excav. $100,000. S. L. Adcook, 109 West Ellis St., engr.

N. Y., Scottsville—See "Sewers."

Ia., Waucoma — Making plans waterworks. $20,000. W. E. Buell & Co., 205 Davidson Bldg., Sioux City, engrs.

Ia., Waterloo—Making plans 2 rein.-con. reservoirs, rein.-con. slab covers, manholes, valves, aerators with screen house, etc. Mead & Seastone, State Journal Bldg., Madison, Wis., engrs.

Minn., North St. Paul—Plans waterworks extension and electrification of pumping plant. $60,000. Toltz, King & Day, 1410 Pioneer Bldg., St. Paul, engrs.

Minn., Storden—Plans waterworks, $15,000. W. E. Buell & Co., 205 Davidson Bldg., Sioux City, Ia., engrs.

Minn., West Concord—Plans waterworks extensions, electrification of pumping plant, constructing pump house. $35,000. Toltz, King & Day, 1410 Pioneer Bldg., St. Paul, engrs.

Neb., Lincoln—Plans 3,180 ft. 6 in. and 2,760 ft. 4 in. pipe in Dist. 32, 48th St. from South to Glade Sts., Glade St. from 48th to 51st Sts., 51st St. from Glade to Normal Sts., Normal St. from 51st to 53rd Sts., 53rd St. from Normal to Myrtle Sts., Myrtle St. from 53rd to 56th Sts., 56th St. from Mrytle to South Sts. G. W. Bates, city engr.

Tex., Winters—Voted $30,000 bonds for waterworks improvements incl. raising of present dam 4 ft. and extending mains. Address Mayor.

Wash., Walla Walla — Rejected bids opened June 6, constructing Div. 2 waterworks system, incl. 4 mi. 20 in. pipeline into Wenaha National Forest, gravity dam, 100 ft. wide, 16 ft. high, etc. Will readvertise at once. $140,000. E. B. Hussey, Alaska Bldg., Seattle, engr.

Cal., Manteca—Election soon to vote on $40,000 bonds to purchase and improve privately owned waterworks system.

Cal., Vernon—Had preliminary plans prepared high pressure water system, 63,000 ft. 8-16 in. c.i. pipe, 1,500 gal. per min. motor driven turbine pump, cement lined reservoir, 3,000,000 gal. capacity, 3 centrifugal pumps, etc. $450,000. H. McCurdy, 335 Pacific Electric Bldg., Los Angeles, engr.

BIDS DESIRED

N. Y., Saugerties—July 19, by Bd. Water Comrs., Market St., excavating of about 30,000 cu.yd. material, also excavating and laying about 1,800 ft. 18 in. temporary mains, etc. J. F. Loughran, Kingston, civil engr.; adv. this issue.

N. C., Wilmington—July 18, at office R. C. Cantwell, comr. pub. wks., addition to present water purification plant and extending water intake line; adv. this issue.

Fla., Vero—July 12, constructing waterworks system. G. M. Willing, clk; adv. this issue.

O., Columbus—See "Streets and Roads."

Mich., Grand Rapids—July 6, by G. J. Wagner, dir. pub. serv., addition to filtration plant, incl. intake pipe, clear water conduit, vitr. tile drain. C. A. Paige, city engr.

Minn., St. Paul—July 3, by H. W. Austin, city purch. agt., furnishing 12 filter operating tables for Water Dept. O. Claussen, city engr.

Ark., Gillett—July 18, by J. B. Quinn, secy. Farelly Lake Levee Dist., Marion Hotel, Little Rock, concrete flood gate and appurtenances, at Big Bayou Meto, here. Ayres & Miller, McCall Bldg., Memphis, Tenn., engr.; adv. this issue.

Tenn., Fayetteville—July 18, rein.-con. circular covered reservoir, 1,000,000 gal. capacity, 650 cu.yd. concrete. W. G. Kirkpatrick, 2103 Erdman Ave., Baltimore, Md.; engr.

BIDS RECEIVED

N. Y., St. George—N. J. Hayes, comr. Water Supply, Gas & Electricity, Municipal Bldg., New York, opened bids June 19, mains in (1) Cary, Carter, Columbus Sts., etc., (2) Barton, Bay View, Bedell, Bogardus, Centre, Eagan, Fabian Sts., etc., from N. DeStefano, 257 Glenn Ave., Tompkinsville, (1) $15,061, (2) $49,892; Paladino Contg. Co., 437 East 120th St, New York, (1) $26,848; Dominick Constr. Co., (1) $15,511, (2) $53,470; Beaver Eng. & Contg. Co., 51 Chambers St., New York, (2) $55,606. Noted June 15.

Minn., Winona—G. W. Hoffman, city clk., opened bids extending watermain, 14,774 lin.ft. 6-10 in. Class D c.i. pipe, 10,812 lb. standard Class D c.i. castings, twenty-eight 6-10 in. gate valves, etc., from T. E. Wolley, LaCrosse, Wis., $31,587; W. Danforth, 810 Guardian Life Bldg., St. Paul, $33,900; E. T. Webster, 437 Beacon Ave., St. Paul, $35,255.

CONTRACTS AWARDED

Conn., Simsbury—Village Water Co., concrete dam and gate house at new reservoir, to A. W. Byrne & Son, 79 Linnmore St., Hartford. Engrs. est. $25,000.

N. J., Pompton Lakes—Boro Council, Municipal Bldg., furnishing and installing pipe line, to W. G. Fritz Co., 258 Valley St., West Orange, $22,712. Noted May 25.

N. J., Trenton—Installing 1 Ames Unaflow engine, 1 rotary pump, electric generator, condenser, etc., in pumping plant, to H. E. Stahl, Goodwill Pl., $57,989. Noted June 1.

Pa., Phila.—Furnishing and installing ash and coal handing equipment, to Specialty Eng. Co., Trenton and Allegheny Aves., $65,208; sand, to M. J. McCrudden, Real Estate Trust Bldg., $9,864; patent sleeves and stop valves, to Acme Machine Co., 316 North 7th St., $13,880; c.i. inlets, to F. T. Buckins, 4050 Kensington Ave., $14,593. Noted June 15.

N. C., Elkin—Installing water and sewerage plants, filtering plant and reservoir basin, to Myers Constr. Co., Meridian, Miss. Noted May 4.

N. C., Goldsboro—State Hospital for Negroes, water pumping equipment, power plant piping and apparatus and heating and ventilating equipment, to B. McKenzie, Greensboro, $134,000.

O., Columbus—R. W. Smith, clk. Franklin Co., 1,260 ft. 12 in. cement and 1,470 ft. 6 in. mains, to Pitt Constr. Co., Fulton Bldg., Pittsburgh, Pa., $12,144. Noted June 22.

Ia., Waukon — For rein.-con. reservoir 500,000 gal. capacity, 2,400 cu.yd. earth excav. and embankment, 48,000 lb. reinforcing, 500 cu.yd. concrete, to Harrison Transportation Co., 407 15th St., Des Moines, $12,460.

S. D., Sioux Falls—Bd. Comrs. filtration station, iron removal plant, 8,000,000 gal. daily capacity, filter building, filters, sedimentation basin, well, pumping machinery, etc., to A. Fanebust, 800 South 2nd St., $60,551. Noted May 11.

Okla., Bristow—Extending waterworks to Gibson & Mitchell, Pauls Valley, $46,018. Noted May 25.

Okla., Oklahoma City—For 6,000 ton 4-30 in. c.i. pipe, specials, valves hydrants, and valve boxes, to U. S. Cast Iron Pipe Co., Amer. Trust Bldg., Birmingham, Ala., $202,460. Noted April 27.

Wash., Sequim—Constructing 20,000 cu. ft. concrete reservoir and 9,700 lin.ft. 8 in. wood stave pipe, etc., to L. L. Lent, Bremerton, $13,916. Engrs. est. $15,000.

Que., Montreal—Water Works Dept., 25,000,000 gal. rein.-con. reservoir, 500 ft. square, 18 ft. deep, to E. G. M. Cape & Co., 10 Cathcart St. $575,000. Noted June 22.

Sewers

PROPOSED WORK

Mass., South Boston (Boston P. O.)—City of Boston plans rein.-con. overflow sewer in Farragut Rd. extension. $43,300. J. J. Carty, City Hall, engr.

N. Y., Scottsville—Bd. Village Trustees rejected bids opened June 14, sewerage system, disposal works and water works system. Will readvertise. Noted May 25.

N. J., Trenton—Making preliminary plans sewage disposal plant. $1,000,000. C. A. Johnson Co., 150 Nassau St., New York, engrs.

Va., Radford—Having plans prepared and will soon vote on $95,000 bonds for sewerage system. W. E. Gilbert, mayor.

Ky., Henderson — Having preliminary plans prepared for sewerage system. J. A. Cunningham, comrs. Pub. Wks.

O., Akron — Plans intercepting sewer. $300,000 bonds sold. J. E. Root, Delaware Bldg., engr.

O., Akron—M. P Tucker, dir. Pub. Serv. soon takes bids 24-66 in. brick sewer in Sweitzer Creek Dist., $100,000; remodeling present brick and concrete sewage disposal plant, $100,000. J. E. Root, Delaware Bldg., engr.

O., Akron—See "Streets and Roads."

O., Columbus—Franklin Co. plans 8,000 ft. 15-24 in. vitr. sewer in 2nd alley east of Parson Ave. $27,750. E. G. Bradbury, 174 East Long St., Engr. Noted June 15.

Ia., Waucoma — Making plans sewerage system. $25,000. W. E. Buell & Co., 205 Davidson Bldg., Sioux City, engrs.

Neb., Lincoln—Plan laying sewers in 20 blocks, Dist. 238, South St. from Normal to 52nd Sts., 48th, 49 and 50th Sts. from South to Glade Sts., 50th, 51st and 52nd Sts. from South to Summer Sts. G. W. Bates, city engr.

Cal., Calipatria—Having plans prepared constructing 21,600 lin.ft. 6-12 in. vitr. pipe sewers in Assessment Dists. 2 and 3. $32,000. H. Tsheppe, city engr.

Cal., Los Angeles—J. A. Griffin, city engr., completed preliminary estimate for temporary plant for handling sewage now going into ocean. Plans include extension of sewers to treatment plant $100,000, 4 in. wooden pipe line $200,000, treatment plant $153,000, equipment, connecting pipe lines, etc., $47,000.

Cal., Morgan Hill—Plan sewerage system. J. G. McMillan, engr., Auzerais Bldg., San Jose, preparing estimate of cost.

BIDS DESIRED

N. J., Hackensack—July 24, by Hackensack Impvt. Comn., constructing and equipping disposal works, flotation basins, force mains, pumping station, etc. L. Lozier, Bank Bldg., Main and Mercer Sts., engr.; adv. this issue.

N. J., Newark — July 18, by Passaic Valley Sewerage Comrs., 128 Market St., constructing city dock local sewer connection. J. R. Van Duyne, ch. engr.

Pa., Bradford—See "Streets & Roads."

Pa., Sharon—July 5, sewers in 11 streets, incl. 10,108 ft. 8 in. and 2,205 ft. 12 in. pipe. E. Burnside, city engr.

Tenn., Lebanon — July 10, at office of City Clerk, sewerage system and disposal plant also extending water system with reservoir tank. A. B. Clenny, city engr.; adv. this issue.

O., Geneva—July 7, by W. E. Morgan, village clk., sewage treatment plant. Burgess & Niple, 223 East Broad St., Columbus, engrs.; adv. this issue. Noted Jan. 19.

Wis., Shawano—July 7, by Dillett & Fischer, attorneys for Farm Drainage Bd., 136,188 cu.yd. ditching, length 7.7 mi., average depth 7 ft., width of bottom 6 and 4 ft. Private plans.

Minn., Barnum—July 17, by A. D. Dathe, clk., sewerage system, 5,000 lin.ft. 8-12 in. vitr. tile sewers, 15 manholes, 3 lampholes, 2 outfalls, $25,000. Druar & Milinowski, 500 Globe Bldg., St. Paul, engrs.

Ont., Elma—July 8, by G. Lochead, Atwood, constructing Boyle Drain, tile up to 18 in. $81,000. J. Roger, Mitchell, engr.

BIDS RECEIVED

N. Y., Long Island City—M. E. Connolly, pres. Queens Boro, Queens Subway Bldg., opened bids June 19, sewers in Brown Pl., etc., from Seaside Contg. Co., 193 Beach 108th St., Rockaway Park, Type A, $28,915, Type B $28,915; Kennedy & Smith, 93 Amity St., Flushing, Type A, $36,230; P. J. Murray, Type A, $46,006, Type B, $31,306; A. Mannano, Type B, $30,295. Noted June 15.

Cal., Stockton — Constructing 12,730 ft. 4 in. and 15,900 ft. 6 in. pipe, etc., in Fair Oaks Dist., from Schultz Constr. Co., 46 Kearny St., San Francisco, $28,691; Heafey, Moore & McNair, 2030 High St., Oakland,

Sewers (Continued)

$27,851; Frederickson & Shannon, Cory Bldg., Fresno, $28,568. Noted June 15.

CONTRACTS AWARDED

N. Y., Brighton—Comrs. Sewer Dist. 1, 847 Powers Bldg., Rochester, sewers in certain streets in Sewer Dist. 1, here, to A. Petrossi, Rochester, $33,998. Noted June 8.

N. Y., Jamestown—See "Streets and Roads."

N. Y., Syracuse—Intercepting Sewer Bd., sewage treatment plant, to J. Young, Bastable Bldg., $68,284. Noted June 8.

Pa., Phila.—Branch sewers in Allen Grove, 59th and Wakeling Sts., to F. T. Buckins, 4050 Kensington Ave., $23,896; Arlington and Berks Sts., to R. Higgins, 4642 Lancaster Ave., $18,943; Cornwall, Pratt and Stafford Sts., to A. J. Ellis, 5724 North Marshall St., $7,926; Dickinson St. and Kingsessing Ave., to D. DeLise, 4842 Leightgow St., $4,455; Fox St. and Wissahickon Ave., to E. Pascuzzi, Lincoln Bldg., $26,909; Hegerman, Keystone and Luzerne Sts., to A. DeSandro & Sans, 3906 North 50th St., $17,120; Price and Filbert Sts., to M. Mattia, 263 Simpson St., $4,612; Norwood St., to F. Berrelli, 6413 Callowhill St., $624; Westview St., and Rittenhouse St. from Chew to Ardleigh Sts., to D. MacMahon, Germantown, (Phila. P. O.), $9,134; Rittenhouse St. from Ardleigh to Andrews Sts., to A. Devito, 1721 Hicks St., $6,458; Boyer St., and Rittenhouse St. from Chew to MacMahon Sts., to E. T. Bennis, 641 East Chelten Ave., $37,797; Wood St. to R. Lombardi, Lincoln Bldg., $10,325; Johnson St., to J. Lombardi, Lincoln Bldg., $56,-014; Anderson St., to C. Riccardi, 1220 South Juniper St., $4,970; Washington Lane, also Columbia Ave., Bonsall and Elling Sts., to A. A. Pastori, 5904 Woodland Ave., $25,048 and $25,942 respectively. Noted June 15.

Fla., Jacksonville—Sewers in 23rd, Talleyrand, 12th, Copeland and Spearing Sts., to B. Thompson, Box 1044, Tampa, $27,192. Noted June 15.

N. C., Elkin—See "Waterworks."

N. C., Lexington—Constructing sewer lines to Myers Constr. Co., Charlotte; pipe, to Pomona Terra Cotta Wks., Greensboro; total $71,100. Noted May 18.

Mich., Detroit—Sewers as follows to Western Constr. Co., 1208 Ford Bldg., Lateral 3504 $8,196, Lateral 3548 $17,981, Lateral 3632 $3,540, Lateral 3650 $40,364; Hammen & Co., Mankato, Minn., Lateral 3597 $6,276; Judd Co., 2287 12th St., Lateral 3638 $24,778, Lateral 3657 $20,225, Lateral 3659 $17,348; P. Cappello & S. Fattore, Detroit, Lateral 3653 $1,725, Lateral 3658 $2,175; Martin & Krausman Co., 400 Penobscot Bldg., Lateral 3655 $6,347; M. Mucci, 1557 St. Joseph St., Lateral 3654 $5,959. Noted June 15.

Mich., Detroit—To Connelly Bros., Detroit, Trombley Ave. Arm of Jos. Campau Sewer, $90,116; Jeynes & Affeld, 1208 Ford Bldg., Harper Ave. Arm, Sect. 1 of Ashland Ave. Sewer, $129,936; R. D. Baker, 1631 Elmhurst Ave., Carrie Ave. Arm of North Six Mile Rd. Sewer, $36,984; A. Rossi, 3447 St. Aubin Ave., Moran Ave. Arm of McDougall Ave. Sewer, $39,990. Noted June 22.

Wis., Plymouth—Laying sewers, to W. F. Ribbens Co., Mayville, $30,680; septic tank and sludge bed, to Ward & Weighton, Audubon, Ia., $10,836. Engrs. est, $50,000.

Ia., Exira—Sewerage System, to P. V. Reilly, 1414 7th St., Des Moines, $25,000; disposal plant to W. B. Carter, United Bank Bldg., Sioux City, $9,220.

Ia., Sioux City—For sanitary sewers in Country Club Pl., 25,000 ft. 8 in. vitr. pipe, etc., to W. B. Carter, United Bank Bldg., $25,110. Noted March 16.

Minn., Westbrook—For 15,350 lin.ft., 8-12 in. sewer pipe, 1 Imhoff tank and sludge bed, etc., to O. N. Giellefald Constr. Co., Forest City, Ia., $14,500. Noted May 18.

Neb., Lincoln—Sanitary Dist. 1, Lancaster Co., constructing sewage disposal plant, general contract to A. Phelps & Sons, Knoxville, Ia., 138,075; venturi meter to Simplex Valve & Meter Co., 5722 Race St., Phila., Pa., $1,640; c.i. pipe to U. S. Cast Iron Pipe & Fdry. Co., 122 South Michigan Blvd., Chicago, $7,237; valves and hydrants to Ludlow Valve Mfg. Co., 633-635 The Rookery, Chicago, $2,052; sluice and flap valves to C. D. Butchart Co., Mercantile Bldg., Denver, Col., $1,963. Noted June 8.

Okla., Bristow—Extending sewers to Burke Constr. Co., Oklahoma City, $57,159. Noted May 25.

Ont., St. Catharines—W. P. Near, city engr., sewers, to P. Mohan, 36 Belgrave Pl., London, $35,000; Mitchell Contg. Co., London, $1,600; Lorenzo & Sacco, Niagara Falls, $1,600.

Ont., Toronto—For 30,000 ft. concrete and vitr. drain pipe, 8 in. up, in connection with Western Harbor Development, to W. R. Worthington, 555 Markham St., $120,-000.

Waste Disposal

PROPOSED WORK

Pa., Bradford—Plans to vote on $25,000 bonds for waste disposal plant. E. C. Charlton, city clk.

BIDS DESIRED

Pa., New Kensington—July 18, by W. N. Jenkens, boro. secy., 30 ton waste disposal plant.

Bridges

PROPOSED WORK

N. Y., Lackawanna—Plans rein.-con. bridge, Abbott Rd. $30,000. B. M. McDonnell, City Hall, comr. Pub. Wks.

Pa., East Liberty (Pittsburgh P. O.)—Voted $105,000 bonds to repair 4 viaducts crossing Pennsylvania R.R.

W. Va., Clarksburg—Comrs. Harrison Co. receive bids about July 15, constructing bridges over Harbert Run, Robinson Run, Honepot Run, Branch of Little Rock Camp Run, Branch of Patterson Fork, Patterson Fork, Hall Run, Branch of Tenmile Creek, Rush Run, Buffalo Creek, Stutlers Fork and Farmers Fork. $150,000.

Cal., Hetch Hetchy—Modesto and Turlock Irrigation Dist. having plans prepared 10 span plate girder bridge, concrete piers, 640 ft. long, across Six-Bit Gulch on line of Hetch Hetchy R.R. $70,000. M. M. O'Shaughnessy, City Hall, San Francisco, engr.

Cal., Stockton—Plans bridge over Mormon Channel. $35,000. W. B. Hogan, city engr.

BIDS DESIRED

N. Y., Hewitville (Potsdam P. O.)—July 7, by Town Clerk, Potsdam, 340 ft. rein.-con. and steel bridge, 16 ft. over Raquette River. $40,000. Concrete Steel Eng. Co., 15 Park Row, New York, engrs. Noted June 15.

N. Y., Long Island City—July 5, by G. H. Whalen, comr. Plant & Structures, Municipal Bldg., New York, constructing masonry piers for bridge over Hook Creek Canal at Rockaway Blvd., here.

Georgia—July 1, by State Hy. Dept., Peachtree Bldg., Atlanta, 3 concrete bridges Hartwell-Royston Rd., 47,626 lb. reinforcing, 448 cu.yd. concrete, 304 sq.yd. paving, etc. W. R. Neel, Peachtree Bldg., Atlanta, engr.

Alabama—July 19, by W. S. Keller, state highway engr., Montgomery, constructing 3 rein.-con. bridges over Cubahatchie Creek, Caleebee Creek and Little Caleebee Creek, Macon Co., 1,598.95 cu.yd. concrete, 232,679 lb. reinforcing, 1,791 sq.yd. 4 in. concrete surfacing, two 80 ft. steel spans, complete in place, 3,572 lin.ft. concrete piles, 1,120 lin.ft. untreated timber piles, 2,050 sq.yd. 6 in. concrete slope paving reinforced, etc. $80,000.

Alabama—July 20, by W. S. Keller, state highway engr., Montgomery constructing 990 ft. bridge 18 ft. roadway, over Tombigbee River at Moscow Ferry, Marengo and Sumter Counties, to be known as Rooster Bridge, to have 2 fixed steel spans, 1 movable span with 150 ft. clearance, concrete substructure and approach. Alternate bids on Scherzer, Strauss and Waddell types.

Illinois—July 6 by Dept. Pub. Wks. and Buildings, Div. Highways, Springfield, following bridges, 1 steel and 1 concrete substructure on Route 3, Sect. 38-B, 1 steel superstructure, Route 3, Sect. 38-C, and 1 steel Route 3, Combination J, McDonough Co.; 4 concrete and one 6 span concrete, Route 3, Sect. 56-B, 1 steel superstructure, Route 3, Sect. 56-C, 4 concrete, 1 steel and 6 concrete span Route 3, Combination K, Greene Co.; 1 concrete, Route 11, Sect. L-2, Effingham Co.; 1 steel with concrete substructure, Route 11, Sect. H-1, 1 steel superstructure Route 11, Sect. H-2, 1 steel Route 11, Combination L, Cumberland Co.; 4 concrete Route 14, Sect. 9-B, Hamilton Co.; 25 concrete span Federal Aid Project 6, Sect. K-1, 1 steel superstructure, Route 6, Sect. K-2, 25 concrete approach spans and 1 steel, Route 6, Combination M, Mason-Menard Co.; 5 concrete Route 26, Sect. 17-B, McLean Co.; 3 concrete Route 34, Sect. 26-B, 2 concrete Route 34, Sect. 27-B, 5 concrete Route 34, Combination N, 18 concrete approach spans, Route 37, Sect. 22-B, 1 steel superstructure Route 37, Sect. 22-C, and 18 concrete approach spans and 1 steel span Route 37, Combination O, Clinton Co.; 1 steel substructure Route 39, Sect. 1-B, 1 steel superstructure, 1 steel, Route 39, Combination P, Carroll Co. F. T. Sheets, state highway engr.

Ia., Iowa Falls—July 6 by Auditor Hardin Co., (Eldora), one 140 x 20 ft. open spandrel rein.-con. arch bridge, over Iowa River on River St., here. J. R. Mahed, co. engr.

Ia., Washington—July 6 by Auditor Washington Co., 1 slab bridge and 41 culverts on Federal Aid Project 167. W. P. Rawn, co. engr.

Colorado—See "Streets and Roads."

Col., Ft. Morgan—July 5, by Comrs. Morgan Co., 0.436 mi. concrete bridge and approaches across South Platte River, on State Highway 106, State Project 682, north of here, twenty 50 ft. concrete girder spans. $89,935. L. D. Blauvelt, State Office Bldg., Denver, engr.

Wash., Seattle—Aug. 4, by Bd. Pub. Wks., superstructure, etc., for steel bascule bridge and 2 side spans over West Waterway on West Spokane St. C. B. Bagley, secy.; adv. this issue.

BIDS RECEIVED

Conn., Kent—State Hy. Dept., Hartford, steel superstructure for bridge, two 106 ft. spans, over Housatonic River, near Kent School, here, from Standard Eng. and Constr. Co, Hartford, $26,990; Berlin Constr. Co., Depot Rd., Berlin, $29,600; Amer. Bridge Co., 30 Church St., New York, $31,000. Noted June 15.

N. Y., Schenectady—C. L. Cadle, supt. Pub. Wks., Albany, opened bids June 21, constructing arch rings and deck and tops of certain piers of bridge over Mohawk River, between here and Scotia, from Amer. Constr. Co., Marion Bldg., Cleveland, O., $739,931; Amer. Pipe & Constr. Co., 121 North Broad St., Phila., $763,671; Bush, Roberts & Schaffer Co., 1 Madison Ave., New York, $912,904. Noted May 25.

Nebraska—State Hy. Dept., Lincoln, received bids constructing (1) 2 bridges on Harvard-Eldorado Rd., Project 182, Clay Co., (2) 3 bridges, Bennette-Adams Rd., Project 175 B, Lancaster Co., (3) bridge on Curtis-Maywood Rd., Project 176, Frontier Co. (4) bridge on Minden-Newark Rd., Project 196, Kearney Co., (5) 3 bridges on Central City-Eldorado Rd., Project 156 B, Hamilton Co., (6) 6 bridges on Central City-Eldorado Rd., Project 156 A, Hamilton Co., (7) bridge on Burwell-Deverre Rd., Project 34 A, Garfield Co., (8) bridge on Hebron-Fairbury Rd., Project 118 B, Jefferson Co., (9) culverts on Haigler-Sanborn Rd., Project 191, Dundy Co., (10) bridge on Oakland-South Sioux City Rd., Project 49 E, Dakota Co., (11) 4 bridges on Shelby-Platte River Rd., Project 86, Polk and Butler Counties, (12) 2 bridges on Smiley Canyon Rd., Project 102 A, Sioux Co., (13) bridge on O'Neill-Butte Rd., Project 14 B, Holt and Boyd Counties, (a) with steel jetties, (b) with brush protection, (14) 3 bridges on Elwood-Stockville Rd., Project 184, Gosper Co., from Allied Contractors, Inc., 403 Bee Bldg., Omaha, (1) $5,414, (4) $6,112; Diamond Eng. Co., Grand Island, (1) $4,769, (5) $5,757, (6) $26,622; Southern Kansas Bridge Co., Wichita, Kan., (2) $17,680, (7) $15,705; Pioneer Constr. Co., Railway Exch. Bldg., Kansas City, Mo., (2) $14,283, (5) $6,310, (6) $21,068, (11) $17,-681; M. Day Co., 310 Little Bldg., Lincoln, (2) $17,033; Standard Bridge Co., City Natl. Bank Bldg., Omaha, (3) $3,016, (8) $22,844; Western Bridge & Constr. Co., 748 Bee Bldg., Omaha, (7) $17,592, (9) $9,115, (12) $17,848, (13a) $33,273, (13b) $37,139, (14) $12,239; M. F. Morrison Constr. Co., Chadron, (7) $16,064, (13a) $33,658, (13b) $38,368; Central Bridge & Constr. Co., Wahoo, (9) $20,145; Beatty Constr. Co., Blair, (10) $637; Polk Co. Board, Osceola, (11) $15,833; Pickus Eng. Co., Sioux City, Ia., (12) $18,370, (13a) $47,709; Illinois Steel Bridge Co., 1308 Webster St., Omaha, (14) $12,559. Noted May 25.

CONTRACTS AWARDED

Conn., Kent—State Hy. Dept., Hartford, superstructure for 2 span through steel truss bridge, 23 ft. wide, over Housatonic River, near Kent School, here, to Standard Eng. & Constr. Co., Toledo, O., $26,990. Engrs. est. $27,000.

N. Y., Norwood—See "Potsdam."

N. Y., Potsdam—Town Clerk, East Channel and West Channel Bridges, here, also Norwood Bridge in Norwood all over Raquette River, to MacGregor & Corbett, Herkimer, $119,663. Noted June 15.

W. Va., Weston—Comrs. Lewis Co., constructing and completing concrete bridge

Bridges (Continued)

across West Fork River, to Concrete Steel Constr. Co., Clarksburg, $25,742. Noted May 25.

N. C., Elkin—Constructing 200 ft. rein.-con. bridge, 20 ft. roadway, two 6 ft. sidewalks, to R. M. Thurmond & Co., Lynchburg, Va. Noted April 27, under "Streets and Roads."

Fla., Tavares—See "Streets and Roads."

O., Bridgeport—West End Bridge, steel, to T. Bigelow, Bridgeport, $25,805. Noted June 8.

Ia., Nevada—Story Co. 333 ft. rein.-con. deck girder viaduct, 24 ft., over Chicago, Rock Island & Pacific R.R. tracks, on Lincoln Highway, 1 mi. east of here, to Cole Bros., Ames, $27,498. Noted May 25.

Ia., Newton—Jasper Co., one 331 ft. structural steel bridge, consisting of two 80 ft. plate girder spans and six I-beam approaches; one single span 80 ft. plate girder bridge, to Wickes Eng. & Constr. Co., Polk Bldg., Des Moines, $33,950. Noted June 22.

Minn., St. Louis—St. Louis Co. rejected bids opened June 22, 365 ft. concrete deck bridge, 20 ft., steel bents, I beam spans, over tracks of Duluth, Missabe & Northern and Northern Pacific R.R. $30,000. The above-mentioned railroads will do work with their own construction crews. W. H. Hoyt, Duluth, ch. engr. of former. H. E. Stevens, St. Paul, ch. engr. of latter.

Montana—See "Streets and Roads."

Montana—State Hy. Dept., Helena, grading 1.49 mi. and building Grantsdale Bridge, 280 ft. steel, on Federal Aid Project 174, Ravalli Co. ,to Illinois Steel Bridge Co., 551 Gilfillan Bldg., St. Paul, Minn., 155,000 lb. structural steel in trusses $0.0719 per lb., 66,000 lb. in joints $0.0575, 9,961 cu.yd. common excav. $0.36, 1,600 cu.yd. gravel surfacing $2, 6.72 cu.yd. Class A concrete $25, 100 cu.yd. Class B $20.12 and 10.02 cu.yd. Class B $23, 285 cu.yd. Class D concrete $17.25, etc., total $39,828, engrs. est. $39,778. Noted May 25.

Col., Denver—For Bway. Viaduct, 2,294 lin.ft., Group A, to Amer. Bridge Co., Equitable Bldg., $159,124; Group B, to Kansas City Bridge Co., 510 Orear-Leslie Bldg., Kansas City, Mo., $37,345; Group C, to C. S. Lambie Co., Tramway Bldg., $57,593; Group D, to D. Munro, 716 Adams St., Kansas City, Kan., $21,560. Noted May 25.

Cal., Marysville—Repairing approach to Feather River Bridge, to E. H. Martin, 1520 Franklin St., Oakland, $28,600.

Cal., Stockton — Western Pacific R.R., Mills Bldg., San Francisco, 210 ft. steel drawbridge over San Joaquin River near here, steel work to McClintic-Marshall Co., Call Bldg., San Francisco. Balance of work will probably be done by day labor. $300,000.

Wash., Seattle—Bd. Pub. Wks., constructing foundation for double-leaf bascule and two 140 ft. fixed span approaches, to J. A. McEachern Co., Inc., Colman Bldg., $264,497. Engrs. est., $335,000. This corrects report of June 15 issue.

Railways

PROPOSED WORK

Maine—Mattawamkeag & Eastern R.R., Mattawamkeag, plans 13.3 mi. railway extension from Mattawamkeag to Bancroft. $500,000. Private plans.

BIDS DESIRED

New York—See "Streets and Roads under Syracuse."

Excavation and Dredging

PROPOSED WORK

La., Lake Charles—Calcasieu Parish voted $2,700,000 bonds for deep water channel to the sea, incl. deepening and widening of Intracostal Canal between Calcasieu and Sabine Rivers, to depth of 30 ft. and bottom width of 125 ft., also cut off near Lake Charles, and dredging Prien and Moss Lakes.

Cal., El Centro—Imperial Irrigation Dist. voted $7,500,000 bonds, $5,000,000 of which will be used for buying up and consolidating various mutual water companies, and balance for constructing extensive drainage system. District now includes more than 600,000 acres.

Cal., Gridley—Sutter Butte Canal Co. having surveys made extending Encinal ditch and laterals to irrigate 10,000 acres, 7 mi. long, concrete lined. N. Ware, Gridley, engr.

Cal., Live Oak—Recl. Dist. 2056 had plans prepared 40 mi. ditches, 400,000 cu.yd. excav., 3,000 lin.ft. 12-36 in. concrete pipe for laterals, 148 cu. yd. concrete. E. W. Stanton, Jr., Live Oak, engr.

Cal., Marysville—Had plans prepared dredging and cleaning out Ellis Lake, and installing 8 in. pump, 10 ft. lift. $50,000. W. Meek, Marysville, engr.

Cal., Westley—Easley & Anderson, engrs., Antioch, preparing plans irrigation system, including 8 mi. ditches, wooden lateral ditches, pumping plants, two 12 in. horizontal centrifugal pumps, direct connected 250 hp. motors for each pump. Owner's name withheld.

BIDS DESIRED

N. Y., Brooklyn—July 25, by C. L. Cadle, supt. Pub. Wks., Albany, dredging portion of Henry St. slip at Gowanus Bay, here, Terminal Contr. 90; adv. this issue.

Minn., Albert Lea—July 8, by F. Tavis, aud. Freeborn Co., Judicial Ditch 5, Sect. L, 1,600 cu.yd. excav., 32,808 lin.ft. trenching, laying and backfilling, twenty-three 24 in. intakes, 1 outlet and flood control structure, 2 equalizing wells; Sect. T, 31,205 lin.ft. 6-28 in. drain tile. $25,000. J. H. Sevenson, Albert Lea, engr.

Minn., Austin—July 10, by O. J. Simmons, aud. Mower Co., Judicial Ditch 6, Sect. O, 60,796 cu.yd. excav., 30,000 cu.yd. leveling spoil bank, 24 flood water control structures, 2 weirs and spillways, 3 timber bridges; Sect. T, 39,583 lin.ft. 6-24 in. drain tile; Sect. L, 39,583 lin. ft. trenching, etc. J. H. Severson, Albert Lea, engr.

Minn., Redwood Falls—July 7, by Redwood Co., Ditch 52, 257,561 cu.yd. excav., $28,000, and Ditch 68, 147,806 cu.yd. excav., $19,377. B. J. Reynolds, Redwood Falls, engr. for above projects. Four sections Ditch 33, 111,850 cu.yd. excav., tile, etc., $100,935. G. P. Smith, Central Bank Bldg., St. Paul, engr. Noted April 27.

Minn., Redwood Falls—July 8, by Redwood Co., laying tile in Ditch 69. $47,305. B. J. Reynolds, Redwood Falls, engr.

BIDS RECEIVED

N. Y., Brooklyn—E. Riegelmann, boro pres. opened bids June 23, dredging (1) Wallabout Canal, (2) Gowanus Canal, from W. E. Potter, 49 Hudson St., Jersey City, N. J., (1) $13,378 (2) $9,490; J. and J. McSpirit, (1) $14,800 (2) $9,800; C. F. Bickle, (1) $17,800 (2) $13,700. Noted June 15.

CONTRACTS AWARDED

Ia., Webster City—Hamilton and Webster Counties, Carlberg Joint D.D. 229 and 299, 29,59 lin.ft. 6-36 in. tile, to Natl. Sewer Pipe Co., Webster City, $30,347; labor to Cooper & Hanson, Iowa Falls, $12,982.

Minn., New Ulm—Brown Co., Ditch 49, 101,215 lin.ft. 6-42 in. tile, 700 lin.ft. 24-42 in. sewer pipe, 1 rein.-con. bulkhead, etc., tile material to New Ulm Tile Co., New Ulm, $39,712, labor to J. W. Wilkin, Dundee, $33,000; Co. Ditch 54, 69,453 lin.ft. 6-30 in. tile, etc., tile material to North State Constr. Co., Mankato, $20,500, labor to A. E. S. Huso, Lake Mills, Ia., $8,995. Noted May 25.

Cal., Los Angeles—City Harbor Comn., City Hall, grading and excavating 118,000 cu.yd. at terminus of Outer Harbor Blvd., San Pedro Dist., to O. Hanson, 653 22nd St., San Pedro, $42,480. Noted June 22.

Cal., Los Angeles — Dredging about 670,000 cu.yd. Los Angeles harbor, San Pedro, to San Francisco Dredge Co., San Francisco, $70,360.

Streets and Roads

PROPOSED WORK

Mass., Newburyport—Plans paving various streets. $100,000. City Hy. Dept., City Hall, engrs.

Conn., New London—Plans 8 mi. concrete sidewalk in various streets. $50,000. Dept. Pub. Wks., City Hall, engrs.

N. Y., Clyde — Plans paving several streets, concrete. $70,000. Engineer not announced.

N. Y., Elmira—Plans paving North Main, East Miller and Baldwin Sts., repaving North Main and Sly Sts. $450,000. C. W. Jarchow, clk.

N. Y., Niagara Falls—Plans paving 1,110 ft. Whitney St. between 24th and 27th Sts., brick, bithulithic, concrete, sheet and block asphalt. $26,000. Estimate based on granite or wood block W. B. Bennett, Convention Hall, city engr.

N. Y., Rochester—Plans and soon takes bids paving Werner Park, $17,000, Akron St. $22,000, Hazel St. $28,000, Sylvester St. $23,200, Violetta St. $12,000, Paige St. $13,400, Plymouth Ave. $46,000, Townsend St. $12,000, Rugraff St. $11,300, Penn St. $11,400, Bronson Ave. $18,600, Dewey Ave. $74,000, Chatham St. $45,000, Willow St. $7,500, Pavillion St. $8,150, Iceland Park $8,400, La Mont Pl. $6,550, roads in Mt. Hope Cemetery $154,000; resurfacing George St., $11,250, Averill St. $27,900, Upton Park $10,500, Erion St. $3,100, Laxton St. $2,200, Brunswick St. $7,150, Churchlea Pl. $5,150, Savannah St. $16,200, all foregoing asphalt; Arnold Park, wood block, $32,300; resurfacing and widening North Union St. $21,000; grading and laying sidewalks on Merchants Rd. $33,000; grading, laying sidewalks and sewers in Westfield St. $22,900, Arnett Blvd. $11,300, Inglewood Dr. $9,200, Penhurst St. $3,550; extending Clifton St. $60,000; surface treating Albermarle St. $2,000, Birr St. $2,900. C. A. Poole, city engr.

N. Y., Salamanca—Plans paving East State St., Wildwood and Nelson Aves., brick and concrete. To exceed $25,000.

N. J., Hillsdale—Hillsdale Twp. at Firemans Hall, Park Ave and Valley St., rejected bids opened June 6, grading, curbing and laying sidewalks, etc., on Valley and Cross Sts., Park, Hillsdale, Railroad, Summit and Central Aves. Noted May 25.

W. Va., Huntington — Soon takes bids improving La Tulle Ave., 24½ St. and 2nd St. W., 7,332 sq.yd. vitr. brick, 5,270 ft. curb and gutter. A. B. Maupin, city engr.

N. C., Maiden—Preparing plans paving various streets, concrete or some asphaltic type. $50,000. Mees & Mees, Charlotte, engrs.

N. C., Morganton—Burke Co plans relocating, grading, topsoiling and constructing bridges, and culverts on 9 mi. Lenoir-Morganton Highway from Morganton to Burke Co. line. $40,000. H. L. Milner, comr.

Fla., Arcadia—De Sota Co. to vote July 7 on $500,000 bonds paving 26 mi. road from Manatee Co. line to Highland Co. line; $500,000 bonds 20 mi. from Hardee Co. line to Charlotte Co. line; $500,000 bonds 18 mi. from State Aid Rd. 7 to County line near Kinsey; $500,000 bonds 6 mi. from Nocatee via Owens to Arcadia; $500,000 bonds 13 mi. from Arcadia, Nocotee, Ft. Ogden to Charlotte Co. line.

Fla., Dade City—Pasco Co. to vote July 14, on $500,000 bonds paving 3 mi. road from here to Gulf. A. J. Burnside, clk.

Fla., West Palm Beach—Palm Beach Co. voted $40,000 bonds paving with 9 in. compacted rock, oil surface, road from Delray north, Aiken St. south, Rd. 1 along Military Trail, along Lake Worth Drainage Canal; $30,000 bonds 7½ mi. Atlantic Ave. west to Range line canal. R. F. Goodman, West Palm Beach, engr. Noted March 23.

Ohio — Dept. Highways and Pub. Wks., Columbus, rejected bids opened June 9, grading, bridging and paving roads in following counties:

Crawford Co., Sect. "G" Bucyrus-Cresline Rd., 1.69 mi., rein.-con., bituminous macadam, asphalt or tar, brick or state to furnish brick.

Licking & Knox Counties, Sect. "K" Columbus-Millersburg Rd., 1.42 mi., rein.-con.

Larain Co., Sect. "D" and "E" Cleveland-Elyria Rd., 6.23 mi., brick or bituminous macadam.

Tuscawaras Co., Sect. "Mineral City" Canton-Canal Dover Rd., 1.03 mi., Kentucky rock asphalt or brick. Noted June 15.

Ohio—Dept. Highways and Pub. Wks., Columbus, rejected bids opened June 16, grading, bridging and paving 10.297 mi. Sect. "C-1" Painesville-Warren Rd., Ashtabula Co., monolithic brick or rein.-con. Noted June 22.

O., Akron—Summit Co. takes bids in July or August grading and paving 2.64 mi. Sect. B-2 and C Vaugh-Twinsburg Rd., vitr. brick, concrete or bituminous concrete. J. Weaver, Court House, engr.

O., Belmont—Plans to issue $50,000 bonds to grading, curbing and paving 4,584 ft. Main, Bridge, Fair, 3rd and Center Sts., brick, Block or concrete. W. M. White, clk.

O., Columbus—W. H. Duffy, dir. Pub. Serv. cancelled contract grading, curbing, laying water mains and paving 1,190 ft. Bruck St. from Markison Ave. to Hasack St. Will readvertise. Noted June 22.

O., Findlay—Hancock Co. will sell $25,000 bonds to pave and improve North Main St.

Mich., Detroit—Having plans prepared paving with 3½ in. sheet asphalt on concrete, Linwood Ave. from Burlingame to Ford Highway, $104,990, Hibbard Ave., $3,910, Pelouze Ave., $21,340, Burton Ave., $14,720, Farnsworth Ave., $9,780, Theodore St., $28,060, Visger Ave., $16,730, also 3 alleys with one course concrete, totaling $11,030. J. W. Reid, city engr.

Mich., Detroit—Plans grading, shaping and paving with 3½ in. sheet asphalt on 8 in. concrete, 14th Ave. from Euclid to Clairmont Sts., $29,700, Iverness Ave. from Fenkell to Pilgrim Sts., $21,000, Elsemere

Streets and Roads (Continued)

Ave. from Fort to Chamberlain Sts., $16,980. Wilson Ave. from Blaine to Hazelwood Sts., $9,360, Davison Ave. from Jos. Campau to Conant Sts., $31,770, also 7 alleys with one course concrete, totaling $23,955. J. W. Reid, city engr.

Minn., St. Paul—Plans paving Raymond and Western Aves. from University to Como Aves., each 1 mi. long. $80,000. A. Claussen, city engr.

Neb., Lincoln—Lancaster Co. plans paving 1½ mi. O St. A. H. Edgren, co. engr.

N. D., Mandan—Plans paving 6 blocks East Main St. $25,000. W. J. Seitz, city clk.

Mont., Helena—Soon receives bids grading and paving Stuart St., Park and Barton Aves., 23,000 sq.yd. concreete, bitulithic, penetration macadam, sheet asphalt or brick. $70,000. T. Carmichael, P. O. Box 398, city engr.

Tex., Brownsville — Cameron Co. voted $350,000 bond and plans additional highway improvements incl. completion of concrete highway between here and Hidalgo Co. line. W. O. Washington, co. engr.

Tex., Sanderson — Terrell Co. will sell $250,000 bonds July 1, highway improvements, incl. State Highway 12. State and Federal Aid will be requested. G. J. Henshaw, co. judge.

Cal., Calipatria—Plans paving 1½ mi. Main St. H. Tsheppe, city engr.

Cal., Fresno—Soon takes bids grading and paving Peralta Way between Lucerne Lane and Van Ness Blvd., 70,645 sq.ft. grading, 61,060 sq.ft. 3½ in. asphalt with 1½ in. warrenite top, 6,145 sq.ft. gutter, 1,760 lin.ft. curb, 2,307 sq.ft. walks, etc. W. Stranahan, city engr.

Cal., San Diego—Had plans prepared paving A, Ash, Beech, Cedar and 7th Sts., 2,251 lin.ft. cement curbing, 7,266 sq. ft. cement sidewalks, 3,658 sq.yd. 5 in. concrete, 7,225 sq.yd. 1½ in. asphaltic concrete on concrete. F. A. Rhodes, city engr. Noted April 6.

Cal., Yuba City—Takes bids about July 5, improving 1,620 B St. between Plumas and Robinson Sts., 57,700 sq.ft. concrete paving, 3,240 lin.ft. concrete curb. E. Von Geldern, city engr.

Que., Hull—Voted $204,500 bonds for new pavements and sidewalks. T. Lanctot, city engr.

Que., Verdun—Takes bids about July 15, paving 1 mi. Verdun and Murlarkey Aves., bituminous macadam. $175,000. C. E. Gyshens, city engr.

BIDS DESIRED

Me., Portland—July 21, by E. M. Hunt, bridge comr., Dept. Pub. Wks., City Hall, rebuilding floor of fixed spans of Vaughans Bridge, wood block paving; adv. this issue.

New York—July 11, by H. S. Sisson, comr. State Hy. Dept., Albany, improving highways in Cattaraugus, Chenango, Delaware, Madison, St. Lawrence, Washington, Wyoming and Yates Counties; reconstructing highway in Chenango Co. J. C. Finch, secy.; adv. this issue.

N. Y., Brooklyn—July 5, by E. Riegelmann, boro pres., Boro Hall, repaving Willoughby St., Bway. from Kent to Bedford Aves., 80th St. between 17th and 18th Aves.; grading East 14th St. from Sheepshead Bay Rd. to Voorhies Ave., lot at St. Johns Pl. and Plaza St., portion of lot on Underhill Ave. near Lincoln Pl., grading sidewalk spaces, curbing and flagging Ave. S from West 8th to West 9th Sts.; resurfacing Van Sicklen Ave.

N. Y., Long Island City—July 5, by M. E. Connolly, pres. Queens Boro, Queens Subway Bldg., grading Armond Pl. from Walter to Charlotte Pl., Vincent St., Steuben St., Griffith Ave.; grading and constructing gutters in Eliot Ave. from Fresh Pond Rd. to Mary St., etc.; grading sidewalk spaces and curbing Jamaica Ave.; laying sidewalks and erecting fence in front of 2 lots on 90th St from point 140 ft. north of Jamaica Ave.; recurbing and reflagging 5th Ave.. repaving Cooper Ave., etc.; Liberty Ave within railroad area, sheet asphalt, with improved granite block.

N. Y., New York—July 6, by J. Miller, pres. Manhattan Boro, Municipal Bldg., paving Ft. Washington Pl. (Magaw Pl.) from West 181st to West 183rd Sts., West 183rd St. from Ft. Washington Pl. to Ft. Washington Ave.; widening and repaving Madison Ave. (curb to rail) from 61st to 69th Sts., 34th St. (curb to rail) from 8th to 9th Aves., all sheet asphalt on concrete.

N. Y., Syracuse—July 25, by C. L. Cadle, supt. Pub. Wks., Albany, paving portion of terminal site, constructing railroad and crane tracks, etc., here, Terminal Contr. 84; adv. this issue.

New Jersey—July 14, by State Hy. Dept., Trenton, constructing Route 1, Sect. 14 from Stelton Rd. to Metuchen, and Route 1, Sect. 13 from Highland Park to Stelton Rd., both Middlesex Co., warrenite bitulithic. A. L. Grover, ch. clk.; adv. this issue.

N. J., Camden—July 12, by C. F. Wise, chn. Bd. Comm., constructing portion of Kings Highways, Delaware Twp., Camden Co. J. J. Albertson, Court House, co. engr.; adv. this issue.

N. J., Mays Landing—July 12, by Bd. Freeholders Atlantic Co., Guarantee Trust Bldg., Atlantic City, reconstructing Hamilton Twp. Sect. of Mays Landing-Downstown Rd. F. W. Willetts, clk.; adv. this issue.

N. J., Newton—July 11, paving High St., rein.-con. W. J. Hardin, town engr.; adv. this issue.

N. J., Newton—July 11, by Sussex Co. paving Fredon-Newton and Branchville Dingmans Rds., rein.-con. H. Snook, Co. engr.; adv. this issue.

N. J., Somerville—July 13, constructing State Highway Route 9, Sect. 0.7, Main St., reinforced cement concrete. W. J. Hardin, boro engr.; adv. this issue.

N. J., Somerville—July 14, by Somerset Co. constructing State Highway Route 16, Sect. 2 from Mine Mount Rd. to Bedminster Corner, 1 course reinforced cement concrete. H. C. Van Emburgh, Court House, co. engr.; adv. this issue.

Pa., Bradford—July 3, by E. C. Charlton, city clk., paving Hobson Pl., Pearl Ave., Mill and York Sts., also sanitary sewers in Willis and Holley Aves., to exceed $30,000. Noted June 1.

Pa., Lilly—July 3, for 1,812 ft. vitr. brick on Cleveland and Piper Sts. P. F. Campbell, Portage, boro. engr.

Pa., Reading—July 5, at office City Clerk, street paving, etc. E. B. Ulrich, city engr.; adv. this issue.

Va., Covington—July 11, at Council Chamber, Masonic Bldg., paving various streets. C. P. Barnett, consult. engr.; adv. this issue.

W. Va., Moundsville—July 18, by Comrs. Marshall Co., grading 2.846 ft. Ramp Hollow Rd.; grading and paving with hillside brick, and concrete curbing 3,300 ft. Jones Hill Rd. R. C. Yoho, Box 517, Cameron, engr.

South Carolina—July 18, by State Hy. Dept., Columbia, constructing 5 mi. Greenwood-Abbeville Highway, Greenwood Co. $50,000.

Ga., Atlanta—July 3, by J. N. Landis, City Hall, paving with asphalt on belgian block, 3,885 sq.yd. Angier Ave. from Boulevard to Arnold St.; concrete and belgian block, 5,249 sq.yd. Hurt St. from DeKalb to Euclid Ave.; concrete paving 13,828 sq. yd. Central Ave. from Fair St. to Georgia Ave., 3782 sq.yd. Central Ave. from Georgia Ave. to Dodd St., 4,217 sq.yd. Glenwood Ave. from Grant to Kelly Sts., 2,440 sq.yd. Garfield Pl. from Highland to East Aves., 2,296 sq.yd. Battlefield Ave. from Arkwright St. to 1st Ave., 16,410 sq.yd. Fitzgerald Ave. from Edgewood Ave. to Decatur St., 1,853 sq.yd. Lawton St. from Greenwood to Sells Aves., 2,650 sq.yd. Wellborn St. from West End to Greensferry Aves., 3,195 sq.yd. Hopkins St. from Gordon St. to Lucile Ave., 1,985 sq.yd. Gordon Terrace from Gordon St. to Mozaley Dr., 6,395 sq.yd. Holderness St. from Lucile to Greensferry Aves., 2,970 sq.yd. Barnett St. from Ponce De Leon to North Aves., 1,790 sq.yd. Iverson St. from Mayson to Mell Aves., 1,610 sq.yd. Walthall St. from Flat Shoals to Kirkwood Aves., 6,310 sq.yd. McPherson Ave. from Flat Shoals to Patterson Aves., 4,444 sq.yd. North Ave. from Peachtree to West Peachtree Sts., 5,899 sq. yd. Boulevard De Kalb from Whiteford Ave. to South Decatur car line, 1,608 sq.yd. Patterson St. from Metropolitan to McPherson Aves. H. L. Collier, City Hall, engr.

Fla., Palatka—July 22, by Comrs. Putnam Co., constructing 22 mi. road from here to Melrose. A. Bruner, Palatka, engr.

Alabama—July 19, by W. S. Keller, state highway engr., Montgomery, grading and gravel surfacing 20.48 mi. road from Montgomery Co. line to Tuskegee, Macon Co., 34.82 acres clearing, 128,077 cu.yd. excav. and borrow, 3,396 sta.yd. overhaul, 15,840 cu.yd. local gravel surfacing within 1 mi. haul, 38,300 cu.yd. imported gravel within 1 mi. haul, 157,000 one-half mi. units overhaul on gravel surfacing, 529 cu.yd. concrete, 35,864 lb. reinforcing, 5,000 sq.yd. mixing sand, gravel and clay, 1,000 cu.yd. local gravel to be screened, 1,000 cu.yd. stripping gravel and clay pits, etc.; grading and surfacing 14.617 mi. road from Athens to Elk River-Muscle Shoals Highway, Limestone Co. 7 acres clearing, 66,484 cu.yd. common and 2,873 cu.yd. solid rock excav., 868.84 cu.yd. concrete, 34,632 lb. reinforcing and 9,576 lb. structural steel, 34,292 cu.yd. crushed stone base, local limestone, 154,356 sq.yd. 2½ bituminous macadam, penetration method, using local limestone, alternate bids for surfacing on 25,000 cu.yd. local gravel, 6,000 cu.yd. clean gravel, imported via Athens, 15,000 cu.yd. clean gravel, via Elk River, 275,000 one half mi. units overhaul on gravel; grading, surfacing and re-shaping 3.48 mi. Heflin Anniston Rd. Cleburne Co., 1,462 cu.yd. common and 1,187 cu.yd. solid rock excav., 6,343 cu.yd. imported chert, etc.

Louisiana—July 5, by State Hy. Dept., Baton Rouge, gravel surfacing 11.21 mi. Sorrento-St. Amant Walker, Brittany and Asa Highways, Ascension Parish, incl. 4,079 cu.yd. washed gravel, 8,156 cu.yd. sand-clay gravel; 4.98 mi. Opelousas-Marksville Highway, Sect. B, 8.88 mi. Opelousas-Lafayette Highway, Sect. A, St. Landry Parish, incl. 8,690 cu.yd. washed gravel, 17,363 cu.yd. sand clay gravel. J. M. Fourmy, state highway engr.

Louisiana—July 11, by State Dept., Redmond Bldg., Baton Rouge, gravel surfacing 3.3 mi. East Bank Highway, 5.36 mi. West Bank Highway, 5.7 mi. Vacherie Highway, incl. 17,350 cu.yd. washed gravel. J. M. Fourmy, state engr.

O., Akron—July 5, by M. P. Tucker, dir. Pub. Serv., grading, paving and laying sidewalks on Cole Ave., 3,930 lin.ft. stone curb, 28,720 sq.ft. cement sidewalk, 8,000 cu.yd. earth excav., 915 lin.ft. granite circle curb, 8,445 sq.yd. vitr. brick or asphalt on concrete, $62,000; Weber and Charlotte Sts., 1,280 lin.ft. stone curb, 8,510 sq.ft. cement sidewalk, 1,550 cu.yd. earth excav., 2,210 sq.yd. vitr. brick on concrete, $16,000; Bluff and Prospect Sts., 2,500 lin.ft. stone curb, 17,000 sq.ft. cement sidewalk, 4,000 cu.yd. earth excav., 5,400 sq.yd. vitr. brick, 1,000 sq.yd. granite block or medina block, 5,400 sq.yd. concrete base, $25,000; Spicer St., 3,500 lin.ft. stone curb, 20,000 sq.ft. cement sidewalk, 5,700 cu.yd. earth excav., 210 sq. yd. vitr. brick, 5,340 sq.yd. asphalt, 6,000 sq. yd. concrete base, $56,000; grading, paving, laying sidewalks and sewers in Tallmadge Ave., 10,750 lin.ft. stone curb, 66,400 sq.ft. cement sidewalk, 20,000 cu.yd. earth excav., 17,250 sq.yd. vitr. brick or asphalt on concrete, $200,000. E. A. Kemmler, Delaware Bldg., engr.

O., Columbus—July 13, by W. H Duffy, dir. Pub. Serv., grading, curbing, laying water mains and paving Adams Ave. from Blake St. to Arcadia Ave., 2060 ft. long, 24 ft. wide, asphalt $26,528, brick, $29,108; Alley north of 17th Ave. from second alley west of Summit St. to Summit St., 247 ft. long, 15 ft. wide, brick, $1,597, concrete, 1,294; Markison Ave. from Ann to 18th Sts., 785 ft. long, 24 ft. wide, asphalt, $12,755, brick, $13,867; Mt. Pleasant Ave. from 2nd to 3rd Aves., 410 ft. long, 20 ft. wide, asphalt $8,774, brick, $8,774; Olentangy Blvd. from Orchard Lane to Winthrop Rd., 1427 ft. long, 26 ft. wide, asphalt $25,470, waterbound macadam, $21,417; Mooberry St. from Gilbert St. to Wilson Ave., 1,805 ft. long, 26 ft. wide, asphalt, $25,240, waterbound macadam, $21,713. R. H. Simpson, city engr.

Michigan—July 11, by State Hy. Dept., Lansing, grading and surfacing 4 mi. State Trunk Line Rd. 12-42, Sect. A, 5,200 cu.yd. excav., 42,200 sq.yd. bituminous macadam; 5 mi. State Trunk Line Rd. 69-3, Sect. A, 5,867 sq.yd. bituminous macadam, 41,062 sq.yd. gravel; 2.275 mi. State Trunk Line Rd. 12-37, Sect. A, 2,615 cu.yd. excav., 24,027 sq.yd. gravel, all Iron Co. L. H. Belknap, ch. engr. Noted June 22.

Michigan—July 12, by State Hy. Dept., Lansing, grading and surfacing 6.42 mi. Assessment Dist. Rd. 23, Monroe and Lenawee Counties, 15,570 cu.yd. excav., 45,176 sq.yd. waterbound macadam. L. H. Belknap, ch. engr.

Michigan—July 19, by State Hy. Dept., Lansing, grading 13.267 mi. State Trunk Line Rd. 25-15, Sects. B and C, Chippewa Co., 124,012 cu.yd. excav., also grading and surfacing 4.156 mi. State Trunk Line Rd. 48-7, Sects. A and B, Chippewa Co., 21,184 cu.yd. excav., 38,987 sq.yd. waterbound macadam. L. E. Belknap, ch. engr.

Mich., Ann Arbor—July 14, by I. G. Reynolds, city clk., concrete curbs and gutters in Dists. 24-49 inclusive lateral sewer in Lateral Dist. 112, and storm sewer in Brooks St.; adv. this issue.

Illinois—July 5, by Dept. Pub. Wks. and Buildings, Div. Highways, Springfield, paving 6.33 mi. Route 2, Sect. 50, Macon Co.; 3.64 mi. Route 3, Sect. 48, Greene Co.; 3.21 mi. Route 8, Sect. 14, 2.86 mi. Route 8, Sect. 15 and 6.07 mi. Route 8, Combination A, Peoria Co.; 4.82 mi. Route 14, Sect. 9 and 4.82 mi. Route 14, Combination B, incl. bridge, Hamilton Co.; 4.62 mi. Route 17, Sect 2, Marshall Co.; 4.13 mi. Route 37, Sect. 11, Franklin Co.; 4.6 mi. Route 37, Sect. 12, Franklin-Williamson Co.; 1.8 mi. Route 37, Sect. 13, Williamson Co.; 10.53

Streets and Roads (Continued)

mi. Route 12, Combination C, Franklin-Williamson Co.; 10.46 mi. Route 44, Sect. 18, Will Co.; 0.88 mi. Federal Aid Project 9, Sect. V, Bond-Fayette Co.; 6.49 mi. Route 26, Sect. 16, 5.21 mi. Route 26, Sect. 17, 5.28 mi. Route 26, Sect. 18, 16.98 mi. Route 26, Combination D, and 16.98 mi. Route 26, Combination E, incl. bridge, McLean Co.; 3.14 mi. Route 27, Sect. 31, Woodford Co.; 5.28 mi. Route 27, Sect. 36, Tazewell Co.; 8.42 mi. Route 27, Combination F, Woodford-Tazewell Co.; 5.71 mi. Route 34, Sect. 26 and 5.71 mi. Route 34, Combination G, incl. bridge, Clinton Co.; 3.91 mi. Route 35, Sect. 17, Marion Co.; 3.68 mi. Route 35, Sect. 18 and 7.59 mi. Route 35, Combination H, Marion-Clinton Co.; 4.81 mi. Route 40, Sect. 29, Hancock Co.; 5.03 mi. Route 41, Sect. 16, Winnebago Co.; 6.85 mi. Route 42, Sect. 161, Cook Co.; 0.3 mi. Route 8, Sect. V-4, Macoupin Co. All foregoing 18 ft. Alternate bids on portland cement concrete, 4 in. monolithic brick, 3 in. bituminous filled brick, bituminous concrete with and without binder course. Grading 3.73 mi. Route 3, Sect. 56-A, Greene Co., 137,120 cu.yd.; 0.2 mi. Federal Aid Project 2, Sect. 11, Will Co., 6,400 cu.yd.; 2.92 mi. Route 34, Sect. 27-A, 66,590 cu.yd., 0.4 mi. Route 37, Sect. 22-A, 42,420 cu.yd., both Clinton Co.; 3.85 mi. Route 39, Sect. 1-A, 34,900 cu.yd., 1.99 mi. Route 39, Sect. 2-A, 17,375 cu.yd., and 5.84 mi. Route 39, Combination I, 52,275 cu.yd., Carrol Co. F. T. Sheets, state highway engr.

Wisconsin—July 6, by State Hy. Comn., at div. office 6, 213 South Barstow St., Eau Claire, grading 6 mi. Cornell-Medford Rd., Federal Aid Project 1011, Chippewa Co., incl., 40,273 cu.yd. earth excav., 1,119 cu.yd. borrow, 740 cu.yd. channel change, etc. A. R. Hirst, highway engr.

Ia., Clinton—July 7 grading, curbing and paving 27 blocks in Sects., F-J-K-N-O-P-Q, 34,800 sq.yd. pavement, 31,330 lin.ft. combined curb and gutter, 1,000 cu.yd. excav., 34,800 sq.yd. concrete base, 34,800 sq.yd. separate block base, etc., 1 mi. Paving Dist. 2, 9th St., Lyons St., from Main St. to north city limits, 13,000 sq.yd. pavement, 2,200 lin.ft. curb and gutter, etc., $175,000 and $51,000 respectively. Alternate bids on bitulithic, Willite, sheet asphalt, asphaltic concrete and rein.-con. B. R. Anderson, 410 Weston Bldg., city engr. Noted March 9 and 23.

Ia., Des Moines—July 3 by Auditor Polk Co., grading 1 mi. road south of Valley Junction, 34,848 cu.yd. excav., also paving and incidental work on 7.691 mi. primary road northwest of Polk City, Federal Aid Project 180, 12,183 cu.yd. excav., 90,246 sq. yd. pavement, etc.

Minn., Elk River—July 10, by C. S. Wheaton, Jr., aud. Sherburne Co., grading and graveling 3 mi. Job 2205, State Rd. 4, 28,000 cu.yd. excav., 39,600 cu.yd. gravel surfacing, portable culverts. $25,000. H. E. Chard, Elk River, engr.

Colorado—July 7, by State Hy. Dept., Denver, gravel surfacing 5.414 mi. Moffat Highway, Hayden-Mt. Harris Rd., incl., 22,700 cu.yd. common earth and 900 cu.yd. rock excav., 19,800 cu.yd. borrow fill, 262 cu.yd. concrete, 15,860 lb. reinforcing, $57,898; 10.5 mi. Norwood-Naturita Rd., State Project 7-C, 11,500 cu.yd. common and 6,200 cu.yd. rock excav., 76,600 cu.yd. borrow fill, 478 cu.yd. concrete, 32,300 lb. reinforcing, $62,918; 30 concrete bridges and approaches over Little Dry Creek, State Project 674, $7,931. L. D. Blauvelt, State Office Bldg., Denver, engr.

California—July 10, by State Hy. Comn., Sacramento, grading and paving 16.6 mi. road between Auburn and Colfax, Placer Co., bituminous macadam. A. B. Fletcher, state hy. engr.

California—July 17, by State Hy. Comn., Sacramento, grading 11.3 mi. between Chester Grade and N. E. quarter of Sect. 3, T 28 N., R 9 E., M. D. B. & M., Plumas and Lassen Counties. A. B. Fletcher, state highway engr.

Cal., Lodi—July 3, by City Trustees, improving portion Sacramento St., 49,682 sq.ft. 1½ warrenite on 2½ asphaltic concrete, 55,125 sq.ft. grading, 3,110 lin.ft. concrete curb, 3,887 sq.ft. concrete gutter. L. F. Barzellotti, Lodi, engr.

Cal., Oroville—July 5, by Supervs. Butte Co., excavating, placing in storage, hauling and spreading 14,000 cu.yd. gravel. H. H. Hume, co. surv.

Cal., Yreka—July 3, by Supervs. Siskiyou Co., constructing 3½ mi. McCloud-Bartle Rd. H. J. Sarter, co. surv.

Quebec—July 7, by I. L. Boulanger, deputy minister. Dept. Rds., Parliament Bldgs. Quebec, graveling 3 mi. Levis-Rimouski Highway, through Bord de L'Eau, St. Michael de Bellechasse Parish. M. Neckar, Dept. Rds., engr.

Quebec—July 11, by I. L. Boulanger, deputy minister Dept. Pub. Rds., Parliament Bldg., Quebec, 53,332 ft. Montreal-Ottawa Highway, macadam, in St. Jerusalem, St. Hermas, St. Scholastique, St. Augustin and St. Eustache Parishes, also 11,687 ft. Joliette-L'Assomption Highway, gravel, in L'Assomption Parish. M. Neckar, Dept. Rds., engr.

BIDS RECEIVED

Massachussetts—State Hy. Dept., Boston, opened bids June 13, paving 19,430 ft. State Highway in Haverhill and Merrimac, rein.-con., from Rowe Constr. Co., Malden, $189,082, Hassam Paving Co., 17 Federal St., Worcester, $194,901, Powers Bros., North Montello St., Brockton $196,396; 20,000 ft. State Highway in Cummington and Goshen, bituminous macadam, also bridges, from T. J. Quinn, Providence, R. I., $221,951, Lane Constr. Co., 37 Colony St., Meriden, Conn., $227,582, D. F. O'Connell & Sons, Holyoke, $228,920; 7,815 ft. State Highway in Windsor and Cummington, bituminous macadam, also bridges, from Hanscom Constr. Co., 70 Kilby St., Boston, $119,803, T. J. Quinn, Providence, R. I., $134,065, Middlesex Constr. Co., Medford, $138,954.

N. Y., New York—W. J. Flynn, acting pres. Bronx Boro, opened bids June 22, grading (1) Mt. Edon Ave., (2) Elliott Pl., repaving (3) Jerome Ave., sewers in (4) Middletown Rd., from I. F. Cavaluzzo, 1538 Walton Ave., (1) $32,838, (2) $11,211; Fordham Contg. Co., (1) $32,926, (4) $13,249; M. Delbalso, 660 East 221st St., (1) $34,096; P. Castell, (2) $12,663; J. V. Timoney Constr. Co., 220 East 201st St., (2) $12,892; Leonard Paving Co., 233 Bway., (3) $150,877; P. J. Kearns Contg. Co., 2306 Creston Ave., (3) $151,031; Astoria Contg. Co., 169 Hunter Ave., Long Island City, (3) $154,961; C. E. Farrell Contg. Co., 1981 Pilgrim Ave., (4) $12,575; C. W. McDonald, West 10th St., Brooklyn, (4) $12,858. Noted June 15.

N. Y., Niagara Falls—Paving following alleys (1) Contr. 234, (2) Contr. 235, (3) Contr. 241, (4) Contr. 242, (5) Contr. 247, (6) Contr. 248, (7) Contr. 249, (8) Contr. 255, (9) Contr. 256, (10) Contr. 257, (11) Contr. 258, (a) concrete, (b) 3 in. vertical fibre brick, from Read-Coddington Eng. Corp., 238 Portage Rd. (1a) $4,403 (1b) $6,179 (2a) $4,631 (2b) $6,627 (3a) $4,993 (3b) $7,315 (4a) $10,464 (4b) $15,308 (5a) $6,140 (5b) $8,891 (6a) $12,404 (6b) $18,145 (7a) $5,404 (7b) $7,576 (8a) $8,837 (8b) $12,665 (9a) $6,258 (9b) $9,043 (10a) $3,449 (10b) $4,855 (11a) $7,220 (11b) $9,934; J. F. McKinney Corp., Gluck Bldg., (1a) $4,724 (2a) $4,990 (3a) $5,356 (4a) $11,308 (5a) $6,596 (6a) $13,159 (7a) $5,825 (8a) $9,479 (9a) $6,725 (10a) $3,673 (11a) $7,779. Engrs. est (1) $6,330 (2) $6,100 (3) $8,325 (4) $16,200 (5) $9,350 (6) $19,525 (7) $7,775 (8) $11,380 (9) $9,350 (10) $4,400 (11) $8,775.

Pa., Phila.—Opened bids June 19, paving (1) Louden, Tower, Opal, Water and Woodlawn Sts., (2) Abington and Godfrey Aves., Bonsall and Hope Sts., (3) Banes St., (4) Delaware Ave., (5) 22nd St., (6) grading, paving and curbing, and building concrete wall at Bensalem Ave. Bridge, from Barber Asphalt Paving Co., Land Title Bldg., (1) $29,828, (2) $27,203; Eastern Paving Co., Colonial Trust Bldg., (1) $32,658, (2) $31,652, (5) $45,676; United Paving Co., Colonial Trust Bldg., (3) $14,863; A. J. Henderson, 72nd and Ognotz Aves., (3) $12,423; Curtis Bros., Real Estate Trust Bldg., (3) $13,866; Citroni & Mezzola, 703 South Broad St., (4) $153,904, (5) $41,574; J. Devlin, Jr., Real Estate Trust Bldg., (4) $154,673, (5) $42,964, (6) $11,348; T. Yettman, Jr., Lincoln Bldg., (4) $160,273; F. T. Buckins, Kensington and Deal Sts., (6) $12,673; J. J. McHugh, 1617 Race St., (6) $15,965. Noted June 15.

South Carolina—State Hy. Comn., Columbia, constructing 15.6 mi. Varnville-Yemassee Rd., from Morrison & Glover, Augusta, Ga., $51,277; constructing bridges on above road, from King Bros., Greenwood, creosoted timber, $4,803, Simons-Mayrant Co., Peoples Bldg., Charleston, concrete $10,455. Noted June 1.

Ohio—Dept. Highways and Pub. Wks., Columbus, opened bids June 23, grading, bridging and paving roads with (a) brick, (b) state to furnish brick, (c) asphaltic macadam oil (d) asphaltic macadam, lake, (e) tar macadam, (f) plain concrete, (g) Kentucky rock asphalt, (h) rein.-con., (i) sheet asphalt, (j) asphaltic macadam, oil, sandstone base, (k) tar macadam, sandstone base, (l) asphaltic macadam, lake, sandstone base, in following counties: Ashland Co., Sect. "E" Mansfield-Wooster Rd., 3.468 mi., from F. J. Mann & Sons, Marion, (a) $147,351 (b) $106,000. Columbiana Co., Sect. "F-1" Youngstown-Lisbon Rd., 2.324 mi., T. W. Miller Contg. Co., 3 South Side Savings Bank Bldg., Youngstown, (a) $92,243, (e) $78,930; Morgan Bros., Leetonia, (a) $94,286 (c) $73,622 (e) $73,622; G. B. Patterson, Wellsville, (a) $97,377; R. H. Shafer Co., Chamber of Commerce Bldg., Columbus, (c) $69,822; Tengenthorst & McLaughlin, East Liverpool, (c) $73,903 (d) $73,903; Jones Constr. Co., Salem, (e) $78,092; W. G. Owen, Mineral Ridge, (e) $72,142. Franklin Co., Sect. "B" Columbus-Millersburg Rd., 5.528 mi., from M. C. Miller, 314 East Northwood Ave., Columbus, (c) $173,447 (e) $142,010 (j) $142,019. Hamilton Co., Sect. "B" Cincinnati-Zanesville Rd., 5.221 mi., from Englewood Constr. Co., Englewood, (f) $244,801; Scully Bros., Harrison Pikee, Miamitown, Cincinnati, (f) $246,956; J. Wroe, 54 Davies St., Dayton, (f) $251,407. Huron Co., Sect. "R" Sandusky-Columbus Rd., 1.717 mi., from Wise Bros. and Burman, Elmore, (a) $50,414 (b) $35,898 (g) $36,279 (h) $39,361; A. N. Richards & Sons, Willard, (g) $38,928; Rice & Rice, Shelby, (g) $41,338 (h) $40,010; A. G. Witte & Sons, Elmore, (a) $51,641 (h) $39,990; A. J. Baltes, Norwalk, (a) $52,752. Huron Co., Sect. "E" Barberton-Greenwich Rd., 4.124 mi., from Acton Bros., Vaughnsville, (h) $98,805; Rice & Rice, Shelby, (h) $99,025; A. J. Baltes, Norwalk, (h) $99,289. Huron Co., Sect. "Greenwich" Barberton-Greenwich Rd., 0.1619 mi., from Doris Constr. Co., Akron, (h) $3,926; Acton Bros., Vaughnsville, (h) $3,933; A. J. Baltes, Norwalk, (h) $3,941. Huron Co., Sect. "S" Norwalk-Mansfield Rd., 2.504 mi., from Rice & Rice, Shelby, (h) $58,155; Acton Bros., Vaughnsville, (h) $58,155. Jefferson Co., Sect. "Brilliant South" Ohio River Rd., 0.902 mi., from H. M. Bates, Steubenville, (a) $39,961; E. J. Kane, 461 West Indianaola Ave., Youngstown, (a) $39,936 (b) $31,262. Jefferson Co., Sect. "Brilliant South" Ohio River Rd., 0.902 mi., (federal aid does not participate) from E. J. Kane, 461 West Indianaola Ave., Youngstown, (a) $16,105 (b) $11,788; H. M. Bates, Steubenville, (a) $16,243. Jefferson Co., Sect. "P" Ohio River Rd., 1.776 mi., from H. M. Bates, Steubenville, (a) $84,987; E. J. Kane, 461 West Indianola Ave., Youngstown (a) $87,744 (b) $74,914. Morgan Co., Sect. "I" McConnelsville-New Lexington Rd., 2.061 mi., from S. W. Wrightsel Co., Logan, (c) $62,991 (e) $63,733; Wilson Constr. Co., Newark, (c) $63,725; W. M. Gray, Columbus, (c) $64,252 (e) $64,242. Morrow Co., Sect. "J" Marion-Galion Rd., 2.233 mi., from Marifield & Uncapher, Marion, (c) $67,540, (e) $68,724 (j) $54,919 (k) $56,103; H. F. Ault & Son, Cardington, (c) $71,296 (d) $71,296 (k) $56,838; Benschoter & Lauder, Toledo, (c) $72,258 (e) $72,258 (j) $61,765 (k) $61,756 (l) $58,462; Malloy & Seckel, Marion, (d) $69,889; C. W. Conley, Columbus, (e) $70,363. Pickaway Co., Sect. "K" Cincinnati-Zanesville Rd., 4.785 mi., from Brewer & Brewer Sons, Chillicothe, (a) $173,286 (b) $124,763 (d) $141,513 (h) $153,545 (i) $168,505; Neff & Roder, Circleville, (c) $128,566 (e) $128,566; C. L. Straw, Paulding, (c) $128,807 (e) $128,807; W. H. Ringwald Co., Chillicothe, (c) $131,955 (e) $131,955; P. H. Agerter, Lima, (i) $168,955; Reichelderfer Constr. Co., Circleville, (h) $155,055. Putnam Co., Sect. "N" Lima-Ottawa Rd., 2.718 mi., from G. B. Wolther, Lima, (g) $59,419; R. Stone Constr. Co., Lima, (g) $59,971. Acton Bros., Vaughnsville, (g) $60,575 (h) $68,225; Lewis & Copeland, Lima, (h) $72,820; J. E. Karsch & Sons, Celina, (h) $72,915. Putnam Co., Sect. "O" Lima-Ottawa Rd., 0.58 mi., from Acton Bros., Vaughnsville, (g) $12,362 (h) $14,516; F. F. Walton, Upper Sandusky, (g) $12,664; G. B. Wolther, Lima, (g) $12,718; Lewis & Copeland, Lima, (h) $15,180. Putnam Co., Sect. "Columbus-Grove" Lima-Ottawa Rd., 1.21 mi., from Acton Bros., Vaughnsville, (g) $28,342 (h) $31,801; R. Stone Constr. Co., Lima, (g) $28,662; F. F. Walton, Upper Sandusky, (g) $28,272; Lewis & Copeland, Lima, (h) $33,113. Madison Co., Sect. "G" Plain City-Dublin Rd., constructing concrete girder bridge, from Bennett & Drum, Celina $5,141; G. K. Moses, Troy, $5,894. Noted June 15.

O., Akron—S. Porter, clk. Summit Co., opened bids June 21, grading and paving 3.91 mi. Kent-Darrowville Rd. 119, (a) bituminous concrete, (b) asphaltic concrete, from Carey & Nelson, Akron, (a) $100,514; Sterling Constr. Co., Akron, (a) $107,950; Kahl Bros. Constr. Co., 13004 Woodland St., Cleveland, (b) $102,784. Noted June 15.

O., Akron—M. P. Tucker, dir. Pub. Serv., opened bids June 21, grading, paving and laying sidewalks on (1) 715 ft. Fultz St., (2) 1,800 ft. Bellows St., (3) 1,122 ft. Eastern alley, (4) 707 ft. Fernwood Dr., with (a) Trinidad asphalt, (b) Texaco asphalt, (c) Mexican asphalt, from McAlonan Bros., 506 Woodland Ave., (1) $12,825 and $13,-

Streets and Roads (Continued)

608, (2) $46,398, (3) $4,977, $5,065 and $4,351; Hollinger & Davidson, 313 South Bway., (1) $13,149 and $13,331, (3) $5,409, $5,497 and $4,610; E and W. McShaffrey Co., Rhodes Ave., (1) $13,759 and $13,760, (2) $46,734; Columbus Asphalt Paving Co., 304 Buckeye Bldg., (2) $46,437 and $45,755, (4a) $7,247, (4b) $6,924, (4c) $6,601; T. E. McShaffrey Constr. Co., 171 South Forge St., (4a) $7,137, (4b) $6,428, (4c) $6,428. Noted June 15.

O., Columbus—Franklin Co. opened bids June 20, grading and paving (1) 4.16 mi. Babbitt Rd., Plain and Jefferson Twps., (2) 5.43 mi. Walker Rd., Norwich and Brown Twps., from T. D. Van Camp, 84-85 Nims St., (1) $92,070; M. C. Miller, 301 Clinton Bldg., (1) $93,892, (2) $99,756; E. F. Bolin Co., 1149 Neil Ave., (1) $94,446, (2) $97,666; E. D. Lawrence, Hilliards, (2) $93,447. Noted June 8.

Mich., Detroit—Grading, shaping and paving alleys with one course concrete as follows: (1) 1484, (2) 1485, (3) 1486, (4) 1487, (5) 1488, (6) 1489, (7) 1490, (8) 1491, (9) 1492, (10) 1493, (11) 1494, (12) 1495, (13) 1496, (14) 1497, (15) 1498, (16) 1499, (17) 1500, (18) 1501, (19) 1502, (20) 1503, (21) 1504, from G. Nunn, 6409 3rd Ave., (1) $3,703, (3) $4,013, (15) $2,420, (18) $1,926, (20) $1,208; R. J. Powelson & Co., 6445 Iroquois Ave., (1) $3,432, (2) $4,058, (4) $3,174, (5) $3,719, (6) $3,103, (7) $5,386, (8) $2,840, (9) $5,206, (10) $2,003, (11) $1,835, (12) $1,891, (13) $5,450, (14) $3,184, (15) $2,443, (16) $3,438, (17) $4,395, (19) $1,692, (20) $1,049, (21) $2,795; Otis Cement Constr. Co., 806 Hammond Bldg., (1) $3,538, (2) $4,109, (3) $4,029, (4) $3,237, (5) $3,655, (6) $3,208, (7) $5,335, (8) $2,790, (9) $5,142, (10) $1,980, (11) $1,805, (12) $1,859, (13) $5,392, (14) $3,129, (15) $2,428, (16) $3,378, (17) $4,345, (18) $1,931, (19) $1,663, (20) $1,084, (21) $2,812; J. Porath, 34 McGraw Bldg., (2) $4,126, (3) $3,994, (6) $3,099, (18) $1,811; T. E. Currie, 20 McGraw Bldg., (7) $5,071, (9) $4,890, (13) $5,126, (17) $4,275; Mincel & Zanni, Detroit, (10) $1,998, (11) $1,850, (12) $1,908; Dept. Pub. Wks., Detroit, (21) $2,112.

Mich., Detroit—Grading, shaping and paving (1) Glynn Court, (2) St. Albertus Pl., (3) McGregor Pl., (4) Arizona Ave., (5) Burlingame Ave., (6) Cortland Ave., (7) Cicotte Ave., (8) Duncan Ave., (9) Fairview Ave., (10) Horatio Ave., (11) Lakewood Ave., (12) Parkwood Ave., (13) Seebaldt Ave., (14) Worchester Pl., (15) Tuxedo Ave., (16) Mandalay St., (17) Otsego Ave., (18) Wanda Ave., (19) Herbert St., (20) Davison Ave., from Willite Road Constr. Co., 600 Griswold St., (1) $38,426, (4) $13,362, (5) $37,589, (6) $14,531, (12) $35,480, (13) $7,125, (14) $22,834, (15) $38,427, (16) $19,919, (17) $12,800; Detroit Asphalt Paving Co., 20 McGraw Bldg., (1) $37,369, (2) $7,313, (3) $5,803, (4) $13,235, (5) $36,034, (6) $13,942, (7) $47,229, (8) $6,994, (9) $21,869, (10) $18,920, (11) $22,372, (12) $32,525, (13) $6,685, (14) $21,656, (15) $36,514, (16) $18,369, (17) $11,978, (18) $33,225, (19) $23,019, (20) $34,722; Cleveland Trinidad Paving Co., 402 Hammond Bldg., (1) $36,183, (2) $7,583, (3) $6,161, (5) $34,924, (6) $13,549, (7) $52,317, (8) $7,439, (9) $24,196, (10) $21,748, (11) $25,462, (12) $36,365, (13) $7,596, (15) $35,375, (16) $20,350, (17) $12,899, (18) $34,515, (19) $24,713, (20) $36,408; G. R. Cooke, 1260 Penobscot Bldg., (4) $13,087, (14) $21,465, (18) $32,367, (20) $34,170. Noted June 8.

Wisconsin—State Hy. Dept., Madison, opened bids June 20, surfacing New Auburn-Chetek Rd., Project 186, Barron Co., 9,317 cu.yd. gravel, from S. J. Groves & Sons, Globe Bldg., Duluth, Minn., $21,075; Fitch & Bekka, Minneapolis, Minn., $23,288; Kannia Lumber Co., Mellen, $26,213. Noted June 1.

Wis., Monroe—Paving Adams, Liberty, Payne, Racine and Mechanic Sts., 18,515 sq.yd., (a) vitr. brick (b) rein.-con., (c) asphalt, concrete combined curb and gutter, from O'Dea & Schafer, 1019 Oregon St., Madison, (a) $4.35, (b) $2.33; J. Rasmussen & Sons, 7th St., Oshkosh, (c) $2.50; Western Impvt. Co., Racine, (c) $3.54. Noted June 1.

Wis., Racine—Opened bids June 24, paving (1) 14,000 sq.yd. Asylum Ave., (2) 8,000 sq.yd. 12th St., (3) 7,000 sq.yd. Carlisle Ave., (4) 4,000 sq.yd. Albert St., resurfacing (5) 2,000 sq.yd. 10th St., (6) 1,000 sq.yd. 5th St., (using present macadam base), (a) brick, (b) Trinidad asphalt, (c) rein.-con., (d) asphaltic concrete, from J. Cape & Son, 468 Water St., (1a) $4.44 per sq.yd., (4a) $4.30, (6a) $3.24; Western Impvt. Co., 840 9th St., (1b) $3.44, (1c) $2.74, (1d) $2.81, (2d) $2.81, (3b) $3.44, (5d) $1.84. Noted June 15.

Minn., St. Paul—Ramsey Co. opened bids June 19, surfacing 2.52 mi. Edgerton St. from Crosley Rd. to Centerville Rd. station, (1) crushed rock and tarvia, (2) 1 course rein.-con., (3) asphaltic concrete on concrete, (4) brick on concrete with integral curb, from W. Devine, New Brighton, (1) with limestone base, $45,622, traprock, $52,615, gravel $45,622, (2) gravel aggregate, $69,533, traprock, $73,977; Fielding & Shepley, 216 University Ave., (2) granite aggregate, $83,871, (3) $78,051, (4) gravel base, $110,227; Feyen Constr. Co., 277 Burgess St., (4) limestone base, $110,682. Noted June 1.

Nebraska—State Hy. Dept., Lincoln, improving 48 projects; bidders as follows:

(1) Peterson, Shirley & Gunther, W. O. W. Bldg., Omaha, (2) Beatty Constr. Co., Blair, (3) Pickus Eng. Co., Sioux City, Ia., (4) Keefe Constr. Co., Sioux City, Ia., (5) R. J. Hysham, Route 3, South Omaha, (6) Central Bridge & Constr. Co., Wahoo, (7) C. Metz Constr. Co., Springfield, (8) Monarch Eng. Co., Falls City, (9) M. F. Morrison, Chadron, (10) Phelan & Shirley, W. O. W. Bldg., Omaha, (11) J. J. Thomson, 5619 James St., Omaha, (12) County Board of Butler Co., David City, (13) Allied Contractors, 403 Bee Bldg., Omaha, (14) H. A. Moseman, Lyons, (15) C. F. Perry, Oshkosh, (16) C. J. Rodman, Ogallala, (17) Cook-O'Brien, Railway Exch. Bldg., Kansas City, Mo., (18) County Board of Morrill Co., Bridgeport, (19) Huston & Gillam, Kearney, (20) C. T. Whelan, North Platte, (21) S. M. Aldridge, Auburn, (22) Pioneer Constr. Co., Railway Exch. Bldg., Kansas City, Mo., (23) National Constr. Co., 511 Federal Bldg., Omaha, (24) Lameraux Bros., 416 Arthur Bldg., Omaha, (25) Schlueter Bros., Fremont, (26) Lincoln Co., Board, North Platte, (27) M. Day Co., 310 Little Bldg., Lincoln, (28) E. Euler, Troy, Kan., (29) County Board of York Co., York, (30) Western Bridge Co., 748 Bee Bldg., Omaha, (31) Norfolk Bridge Co., Norfolk, (32) B. B. Gano, Elwood, (33) C. L. Rogers, Franklin, (34) F. L. Smith, Winner, S. D., (35) Cheyenne Co. Board, Sidney, (36) J. W. McGeer, 1722 M St., Lincoln, (37) F. C. Krotter, Palisade, (38) Amer. Paving Co., 411 Finance Bldg., Omaha, (39) Bid Four Constr. Co., Loup City.

Project 191, Haigler-Sanborn Rd., Dundy Co., (1) $15,030; excav. 43,000 cu.yd., $0.29.

Project 49 A, Oakland-South Sioux City Rd., Dakota Co., (2) $7,953, (3) $8,584, (4) $9,398; concrete pavement, 1,930 sq.yd., (2) $3.70, (3) $3.79, (4) $4.33.

Project 49 E, Oakland-South Sioux City Rd., Dakota Co., (1) $12,940, (5) $3,690; excav., 10,250 cu.yd., (1) $0.21, (5) $0.36; gravel surfacing 22,409 sq.yd., (1) $0.36.

Project 107 C, Greenwood-Chalco Rd., Sarpy Co., (6) $4,567, (7) $5,015, (8) $6,018; concrete pavement 1,543 sq.yd., (6) $2.96, (7) $3.25, (8) $3.90.

Project 102 B, Smiley Canyon, Sioux Co., (1) $9,083, (9) $9,298, (10) $10,230; excav. 24,288 cu.yd., (1) $0.29, (9) $0.2975, (10) $0.31.

Project 91 B, road from Douglas Co. line to Ft. Calhoun, Washington Co., (1) $7,654, (10) $8,001; excav. 24,206 cu.yd., (1) $0.31, (10) $0.32.

Project 55 B, Dorchester-Fairmount Rd., Saline Co., (10) $9,933, (11) $10,027, (1) $10,186; excav. 29,240 cu.yd., (10) $0.235, (11) $0.24, (1) $0.245.

Project 49 D, Oakland-South Sioux City Rd., Burt Co., (10) $13,247, (14) $13,370, (1) $13,665; excav., 51,740 cu.yd., (10) $0.235, (14) $0.237, (1) $0.24.

Project 29, Osceola-David City Rd., Butler Co., (1) $22,928, (12) $23,396, (13) $27,139; gravel surfacing 46,791 sq.yd., (1) $0.49, (12) $0.50, (13) $0.58.

Project 98 C, Crete-Wilber-Dorchester Rd., Saline Co., (11) $6,500, (10) $6,680, (1) $7,287; excav. 21,000 cu.yd., (11) $0.24, (10) $0.235, (1) $0.26.

Project 185 A, Geneva-Milligan Rd., Fillmore and Saline Counties, (11) $15,580, (10) $15,898, (1) $16,397; excav., 53,200 cu.yd., (11) $0.23, (10) $0.23, (1) $0.24.

Project 192 A, Lutherville-Oshkosh Rd., Garden Co., (1) $8,589, (15) $9,185, (16) $10,322; topsoil surfacing 6,889 cu.yd., (1) $0.24, (15) $0.25, (16) $0.25

Project 180, Columbus east, Platte Co., (1) $28,734; excav. 48,200 cu.yd., $0.35, gravel surface 18,821 sq.yd., $0.45.

Project 116 A, Johnson-Auburn Rd., Nemaha Co., (1) $18,118, (10) $18,737, (17) $19,156; excav. 41,300 cu.yd., (1) $0.265, (10) $0.28, (17) $0.325.

Project 79 A, Bayard-Broadwater Rd., Morrill Co., (18) $34,253, (19) $42,273, (1) $59,499; clay surfacing 10,640 cu.yd., (18) $0.20, (19) $0.25, (1) $0.30; gravel 130,862 sq.yd., (18) $0.20, (19) $0.22, (1) $0.32.

Project 133 A, Nebraska City-Lincoln Rd., Otoe Co., (1) $33,126, (20) $33,494, (21) $35,163; excav., 126,600 cu.yd., (1) $0.245, (20) $0.25, (21) $0.249.

Project 76 A, Alliance-Chadron Rd., Dawes Co., (22) $1,065, (9) $1,302; concrete pavement 236.67 cu.yd., (22) $4.50, (9) $5.50.

Project 164 B, Hebron-Nelson Rd., Nuckolls Co., (10) $13,555, (11) $13,673, (1) $14,406; excav. 50,570 cu.yd., (10) $0.235, (11) $0.24, (1) $0.25.

Project 108, Hay Springs-Merriman Rd., Sheridan Co., (1) $48,444, (23) $49,127, (24) $49,976; excav., 164,397 cu.yd., (1) $0.28, (23) $0.285, (24) $0.29.

Project 70 A, Stanton-Wisner-Wayne Rd., Stanton Co., (1) $23,294, (11) $23,623, (10) $24,411; excav. 97,734 cu.yd., (1) $0.235, (11) $0.24, (10) $0.245.

Project 70 B, Stanton-Wisner-Wayne Rd., Wayne Co., (1) $29,585, (14) $30,136, (11) $31,842; excav. 124,900 cu.yd., (1) $0.22, (14) $0.224, (11) $0.24.

Project 88 C, Oakland-Crowell Rd., Cuming Co., (5) $5,960 (not complete), (10) $6,830 (not complete), (1) $7,980; excav. 18,000 cu.yd., (5) $0.32, (10) $0.36, (1) $0.31.

Project 172, West Point-Wisner Rd., Cuming Co., (1) 101,836, (13) $102,558 (no excav. or grader), (25) $162,285; excav., 15,300 cu.yd., (1) $0.29, (25) $0.30; gravel surfacing 156,651 sq.yd., (1) $0.59, (13) $0.65, (25) $0.975.

Project 170, North Platte east, Lincoln Co., (19) $81,008, (13) $119,583, (26) $121,625; excav., 18,500 cu.yd., (19) $0.25, (13) $0.29, (26) $0.30; 4 in. gravel 280,711 sq.yd., (19) $0.21, (13) $0.30, (26) $0.305; 3 in. gravel 21,627 sq.yd., (19) $0.21, (13) $0.23, (26) $0.24; 2 in. gravel 6,333 sq.yd., (19) $0.17, (13) $0.20, (26) $0.20.

Project 168 A, Stuart-Bassett Rd., Holt Co., (20) $11,355, (1) $14,034, (27) $21,393; excav. 45,210 cu.yd., (20) $0.25, (1) $0.245, (27) $0.27; gravel surfacing 8,790 cu.yd., (1) $0.30, (27) $1.

Project 146 B, Ogallala-Belmar Rd., Keith Co., (1) $24,286, (16) $24,579, (28) $51,128; excav. 46,894 cu.yd., (1) $0.31, (16) $0.32, (28) $0.35; topsoil surfacing 12,846 cu.yd., (1) $0.30, (16) $0.30, (28) $1.10.

Project 143 B, Fairmount-Osceola Rd., York Co., (1) $51,715, (29) $57,124, (13) $57,730; gravel surfacing 108,184 sq.yd., (1) $0.45, (29) $0.50, (13) $0.50.

Project 139 B, Norfolk-Ewing Rd., Madison Co., (30) $13,875, (31) $14,927, (3) $18,525; excav. 2,088 cu.yd., (30) $0.30, (31) $0.30, (3) $0.50.

Project 181, Ravenna Sweetwater Rd., Buffalo Co., (24) $13,763, (20) $13,845, (1) $15,195; excav., 52,500 cu.yd., (24) $0.245, (20) $0.25, (1) $0.26.

Project 137 A, Springview-Bassett Rd., Rock Co., (10) $6,625, (1) $9,496; excav. 19,900 cu.yd., (10) $0.32, (1) $0.29.

Project 184, Elwood-Stockville Rd., Gosper Co., (1) $27,657, (24) $29,811, (32) $29,968; excav. 92,543 cu.yd., (1) $0.27, (24) $0.275, (32) $0.31.

Project 186, Kimball-Bushnell Rd., Kimball Co., (20) $18,877, (1) $21,702, (33) $23,812; excav. 70,000 cu.yd., (20) $0.26, (1) $0.25, (33) $0.28.

Project 139 E, Norfolk-Ewing Rd., Holt Co., (10) $11,842, (1) $13,694; excav. 34,090 cu.yd., (10) $0.34, (1) $0.26.

Project 188 A, Arnold-Merna Rd., Custer Co., (20) $34,394, (10) $35,268, (1) $35,887; excav. 123,713 cu.yd., (20) $0.26, (10) $0.265, (1) $0.27.

Project 130 B, Sidney-Dalton Rd., Cheyenne Co., (1) $27,761, (35) $29,472, (34) $58,228; excav. 118,200 cu.yd., (1) $0.18, (35) $0.18, (34) $0.39.

Project 168 B, Stuart-Bassett Rd., Rock Co., (10) $33,336, (1) $55,506, (27) $86,817; excav. 126,388 cu.yd., (10) $0.25, (1) $0.245, (27) $0.27.

Project 139 F, Norfolk-Ewing Rd., Antelope Co., (10) $13,830, (1) $19,114; excav. 32,000 cu.yd., (10) $0.315, (1) $0.29.

Project 189, Florence Heights, Douglas Co., (1) $7,875, (23) $8,116, (10) $8,390; excav. 25,557 cu.yd., (1) $0.24, (23) $0.249, (10) $0.26.

Project 175 B, Bennett-Adams Rd., Lancaster Co., (1) $41,642, (10) $42,431, (36) $44,703; excav. 136,390 cu.yd., (1) $0.225, (10) $0245, (36) $0.23.

Project 176, Curtis-Maywood Rd., Frontier Co., (10) $21,144, (37) $22,605, (1) $23,438; excav. 83,700 cu.yd., (10) $0.245, (37) $0.25, (1) $0.26.

Project 187, Elk City Rd., Douglas Co., (10) $40,486, (1) $43,366; excav. 141,500 cu.yd., (10) $0.24, (1) $0.26.

Project 183, Gretna-Elk City, Douglas Co., (1) $35,800, (20) $36,668, (23) $37,502; excav. 125,800 cu.yd., (1) $0.24, (20) $0.25, (23) $0.249.

Project 20, in Lincoln, Douglas Co., excav. 2,832 cu.yd. (13) $0.32, (38) $0.34, (23) $0.40; brick pavement 54,475 sq.yd., (13) $3.43, (38) $3.44, (23) $3.90, total brick pavement, (13) $188,971, (38) $189,493, (23) $214,775; bitulithic pavement 54,475 sq.yd., (13) $3.05, (23) $3.175, total (13)

Streets and Roads (Continued)

$168,156, (23) $175,063; sheet asphalt pavement 54,475 sq.yd., (23) $3, total $165,477; bituminous concrete pavement 54,475 sq.yd., (23) $2.98, total $164,382; concrete pavement 54,475 sq.yd., (13) $2.57, (23) $2.92, (38) $2.57, total (13) $141,869, (23) $161,095, (38) $141,839.

Project 195 A, Litchfield-Hazard Rd., Sherman Co., (10) $14,200, (1) $15,939, (24) $15,985; excav. 48,000 cu.yd., (10) $0.28, (1) $0.29, (24) $0.275.

Project 182, Harvard-Eldorado Rd., Clay Co., (10) $28,297, (1) $31,612; excav. 85,360 cu.yd., (10) $0.32, (1) $0.36.

Project 196, Minden-Newark Rd., Kearney Co., (13) $21,225, (1) $22,457, (19) $23,011; excav. 25,000 cu.yd., (1) $0.245, (19) $0.25; gravel surfacing 29,422 sq.yd., (13) $0.47, (1) $0.36, (19) $0.38.

Project 37, Rockville-Loup City Rd., Sherman Co., (39) $11,038, (1) $16,048; excav. 8,900 cu.yd., (39) $0.17, (1) $0.29.

Project 164 A, Hebron-Nelson Rd., Thayer Co., (10) $12,958, (17) $13,158, (1) $13,278; excav. 40,000 cu.yd., (10) $0.315, (17) $0.32, (1) $0.32. Noted May 25.

Neb., Lincoln—Improving 35th St. from O to X Sts., and X and W Sts. from 33rd to 35th Sts., from Abel Constr. Co., Terminal Bldg., asphaltic concrete $2.31, concrete $2.15, curb $0.50, etc., total $38,806; Cochrane Constr. Co., 1st Natl. Bank Bldg., asphaltic concrete $2.36, concrete $2.15, curb, $0.50, etc., total $39,443.

Tex., Decatur—Wise Co. grading and surfacing 20.7 mi. State Highway 2 from here to Montague Co. line, incl. 1,840 cu.yd. concrete, 140,989 lb. reinforcing and 49,700 lb. structural steel, 14,420 cu.yd. clay, from Mitchell Constr. Co., and Everheart Bros., Cleburne and Mathis, Tex., $58,882; Harris & Powell, Marlin, $67,631; F. P. McElwrath, Corsicana, $71,146. Noted June 8.

Tex., Paris—Lamar Co. surfacing (1) 4 mi. State Highway 19, Federal Aid Project 296, incl., 37,397.78 sq.yd. concrete, 280 cu.yd. concrete base, 47,827 cu.yd. wire mesh reinforcing, paving (2) 6 mi. State Highway 5, incl., 56,320 sq.yd. concrete, from F. P. McElwrath, Corsicana, (1) $89,246, (2) $137,984; J. C. Field Co., Denison, (1) $93,877, (2) $143,616; McCollum Constr. Co., 1507 F & M Bldg., Ft. Worth, (1) $102,304, (2) $155,443. Noted June 8.

CONTRACTS AWARDED

N. H., Newport—State Hy. Dept., Concord, paving 1.46 mi. State Highway, bituminous macadam on stone, to R. E. Bull, 148 Boutelle St., Fitchburg, Mass., $31,704.

Massachusetts—State Hy. Dept., Boston, paving 18,950 ft. State Highway, in Windsor and Dalton, bituminous macadam, to Lane Constr. Co., 37 Colony St., Meriden, Conn., $161,958; 13,700 ft. in Lee, rein.-con., to C. E. Horne, Milford, $143,139; 5,580 ft. in Middleton, bituminous macadam, to J. E. Watkins, 1 Fern Ave., Amesbury, $29,397.

Conn., New Haven—Paving Bassett, Perkins and Arch Sts., about 11,500 sq.yd. asphalt, to D. V. Frione & Co., 105 Ward St., $28,266.

N. Y., Brooklyn—Dept. Parks, Municipal Bldg., New York, improving South Lake Dr., Prospect Park, here, to Cleveland Trinidad Paving Co., Flushing, $54,879. Noted June 22.

N. Y., Brooklyn—E. Riegelmann, boro pres., Boro Hall, paving Bristol and East 8th Sts., to Borough Asphalt Co., 1301 Metropolitan Ave., $7,398 and $6,791 respectively; grading, curbing, etc., Schenectady Ave., to F. Donavan Sons Trucking & Contg. Co., 614 Union St., $6,606; Union St., to T. B. Scott, $3,180; 80th St., to G. M. Mandatto, 129 29th St., $3,626; curbing, etc., Coney Island Ave., to Soviero & Britton, 10111 114th St., Richmond Hill, $81,437; resurfacing Canarsie Lane, to C. Gallagher, 745 Dean St., $16,985; Gravesend Neck Rd., to Murphy Bros., 262 Bay 43rd St., $16,446; Ave. U, to J. J. Guinan Contg. Co., 2314 Gravesend Ave., $64,146. Noted June 15 and 22.

N. Y., Brooklyn—E. Riegelmann, boro pres., Boro Hall, paving Dupont St., to Welsh Bros. Contg. Co., 32 Queens St., Long Island City, $11,210; East 14th St., and resurfacing Sheepshead Bay Rd., Neptune, Ocean and Voorhies Aves., to C. Gallagher, 745 Dean St., $12,465, $11,905, $35,462, $51,298 and $16,555 respectively; paving Kenmore Pl. from Ave. L to Ave. M and paving and curbing Kenmore Pl. from Ave. I to Ave. L, to Borough Asphalt Paving Co., 1301 Metropolitan Ave., $7,735 and $28,179 respectively; paving New York Ave. and Ave. R, to Cleveland Trinidad Paving Co., Flushing, $4,888 and $10,789 respectively; 59th and 61st Sts. from 17th to 18th Aves., 46th, 70th and 81st Sts., to Uvalde Asphalt Paving Co., 1 Bway., New York, $15,923, $9,137, $7,619 and $14,132 respectively; grading, curbing and laying sidewalks on Kenmore Pl. from Ave. L to Ave. M, to G. Mandatto, 139 29th St., $3,073. Noted June 8.

N. Y., Buffalo—To Rock Asphalt & Constr. Co., Morgan Bldg., repaving Main St. from Hertel Ave. to old city line, $111,489, paving Parkridge Ave., $26,794, Collaton St., $6,014, Fuller St., $16,826, all specification B standard asphalt on concrete; to H. P. Burgard Co., 1968 Fillmore Ave., Ellicott St., $35,300, specification B standard asphalt and block stone on Portland cement, Thatcher Ave., $20,900, Midway Ave. $13,600 and Northland Ave., $20,350, all specification B standard asphalt on concrete; to Erie Contg. Co., Morgan Bldg., Athol St., $9,572, Salem St., $9,533, both specification B brick on concrete; to B. F. Spire, 24 Colonial Circle, Jackson St., $5,850, specification B brick on concrete. Noted May 18.

N. Y., Jamestown—Bd. Estimate & Review will pave Arnold, Thayer, Lafayette and Crossman Sts., vitr. brick on concrete, by day labor under supervision of L. Bergman, city engr. and superintendent Pub. Wks. $25,000.

N. Y., Jamestown—Bd. Estimate & Review will concrete curb and gutter 750 ft. King St., $1,500, 585 ft. Fairview Ave., $585, 1,370 ft. Ivy St., $1,233; pave 2 short streets, with Hillside brick on 5 in. concrete, $9,000; 2,334 ft. 12-18 in. storm sewers in Lind alley, Cedar and Fluvanna Aves., King, English and Tower Sts. $6,650; 263 ft. 8 in. sanitary sewer in Jefferson St., $700; 450 ft. extension of concrete culvert in 11th St., $5,000. Work will be done by day labor under supervision of L. Bergman, city engr.

N. Y., New York—J. Miller, pres. Manhattan Boro, Municipal Bldg., repaving Amsterdam Ave., West 139th and West 147th Sts., to Asphalt Constr. Co., 208 Bway., $27,812, $13,349 and $9,219 respectively; 114th St., to Interboro Asphalt Co., Creston Ave., $9,882. Noted June 15.

N. Y., Niagara Falls—Paving 11th St. and Highland Ave. (a) outside of tracks, (b) inside of tracks and 2 ft. outside, asphalt, to Read-Coddington Eng. Co., 238 Portage Rd., (a) $83,797; J. F. McKinney Corp., Gluck Bldg., (b) $11,000.

N. Y., Rochester—Bd. Contract & Supply, to J. Frederich, Inc., Rochester, paving East Main St., $75,104, Barons St., $10,553, Henry St., $11,356, all asphalt; to T. Holahan, 164 Lewis St., Barrington St., $7,980, asphalt; to Whitmore, Rauber & Vicinus, 279 South Ave., Cleveland, St., $8,009, asphalt; to W. J. Bender Cement Walks, Inc., Rochester, cement walks on Santee St., $394.

N. Y., Scotia—Village Bd. Trustees, concrete curbing and paving 1st St., to W. H. Brown, 434 State St., Schenectady, $17,699. Noted May 18.

N. J., Belvidere—Warren Co., constructing State Highway Route 9, Sect. 9 from Phillipsburg to Still Valley, to Crilly & Cannon Constr. Co., 4 Union Sq., Phillipsburg, $110,345, 89.18% of engrs. est. Noted June 8.

N. J., Mt. Holly—Burlington Co. improving Bridgeboro-Riverside Rd., concrete, to Union Paving Co., 30th and Market Sts., Phila., $77,759. Noted June 8.

N. J., Morristown—Morris Co. reconstructing 21,114 sq.yd. Speedwell Ave. from here to Morris Plains, concrete, to J. S. Geigers Sons, 83 Hartford St., Newark, $144,585. Noted June 1.

N. J., Trenton—Mercer Co. constructing State Highway Route 1, Sect. 6, Greenwood Ave., to Rees-Taylor Co., Mechanics Bldg., $95,347. Noted June 1.

Pa., Phila.—To Barber Asphalt Paving Co., Land Title Bldg., paving Lawrence and Anderson Sts., $26,435, Price, Lauden, Delphine and B Sts., $26,276, Chew and 16th Sts., $24,959, Garnet St., $13,875; Eastern Paving Co., Colonial Trust Bldg., Highland Ave., Clearfield, 49th and Helen Sts., $15,974. Noted June 8.

W. Va., Berkeley Springs—Comrs. Morgan Co. constructing Paw Paw-Great Cacapon Rd., Cacapon Dist., to W. J. and J. T. Gephart, Linden, Williamsport, Pa., $68,015. Noted May 11.

North Carolina—State Hy. Comn., Raleigh, grading and paving 6.65 mi. Project 630 B, Gaston Co., 2 in. bitulithic on 5 in. concrete, to W. F. McCanless, Charlotte, $179,241.

N. C., Elkin—For 35,000 to 40,000 yd. concrete to Campbell Constr. Co., Columbus, Ga., $2.525 per yd. Noted April 27.

S. C., Charleston—State Hy. Dept., Charleston, constructing 5.3 mi. bard surfaced road, Charleston Co., to J. M. Gregory & Co., Newton, N. C., $158,283. Noted May 11.

Ga., Atlanta — To Jamison-Hallowell, Chandler Bldg., paving 750 sq.yd. Irene St., 6 in. vibrated slag $2.30, Dixie Ave. from Waddell St. to Druid Circle, vibrated stone $2.34; to Nichols Contg. Co., Trust Co. Georgia Bldg., 1,565 sq.yd. Virginia Circle, concrete, $2.12, 930 sq.yd. De Leon St., concrete, $2.12, 2,700 sq.yd. Clemont Dr., concrete, $2.12, 1,380 sq.yd. Greencove St., concrete $2.12; to T. D. Meador, Jr., Glenn St. from Washington to Pryor Sts., 6 in. vibrated $2.34, Clifton Ave. from McLendon to Ponce De Leon Aves., 6 in. vibrated $2.22, 3,250 sq.yd. Euclid Ave., 6 in. vibrated $2.27. Noted June 1.

Ga., Thomaston—Upson Co. paving 9 mi. Sect. C, from here to Tabler Bridge to Nichols Constr. Co., Trust Co., Georgia Bldg., Atlanta, $55,212; 19 mi. various roads, to Brooks Callaway Co., Forsyth Bldg., Atlanta, $23,935; bridge, to Stanley Ringer, La Fayette, Ala., $23,364.

Ga., Thomasville — Paving various streets and sidewalks, 12,510 sq.yd. asphalt, 3,732 lin.ft. curbing, 3,732 lin.ft. gutter, 1,810 sq.yd. sidewalk., to Adams, Evans Co., Atlanta Bank Bldg., Jacksonville, Fla., $39,442.

Fla., Tavares—Lakee Co. clearing, grading and sand-clay surfacing 10½ mi. road from Clermont to Polk Co. line, also constructing 155 ft. creosoted timber bridge over Palatlakaha River, to Bryson Live Stock Co., Box 929, Jacksonville, $40,799 and $3,750 respectively.

Ohio—Dept. Highways and Pub. Wks., Columbus, grading, bridging and paving roads in following counties: Allen Co., Sect. "I" Lima-Wapakoneta Rd., 3.929 mi., to E. J. Heill, 410 South Jameson St., Lima, brick, $135,745; Brown Co., Sect. "Hammersville" Cincinnati-West Union Rd., 0.637 mi., to J. E. Barbro, Withimsville, tar macadam, $13,285; Brown Co., Sect. "P-1" Cincinnati-West Union Rd., 3.072 mi., waterbound macadam, to E. J. Barbro, Withimsville, $62,688; Mahoning Co., Sect. "W" Akron-Youngstown Rd., 0.457 mi., brick, to R. C. Miller, Youngstown, $13,861. Noted June 15.

Ohio—Dept. Highways and Pub. Wks., Columbus, grading, bridging and paving roads in following counties: Allen Co., Sect. "L-3" Lima-Sandusky Rd., 3.119 mi., to L. L. Clymer, Bluffton, brick, $104,403; Ashtabula Co., Sect. "I" and "H" Youngstown-Conneaut Rd., 6.992 mi., tar macadam, to E. J. Inman, Ashtabula, $154,852; Darke Co., Sect. "E" Dayton-Greenville Rd., 4.491 mi., rein.-con., to E. and G. Alexander, North Star, $121,388; Hancock Co., Sects. "A-2", "B-1" and "B-2" Ottawa-Findlay Rd., 3.07 mi., rein.-con., to Pettibone & Graves, Lakeside, $78,200; Trumbull Co., Sect. "A-3" Canfield-Niles Rd., 0.26 mi., brick, to J. De Jute, Niles, $11,418; Union Co., Sect. "F" and "Marysville," Marysville-Bellefontaine Rd., 0.597 mi., Kentucky rock asphalt, to M. B. Koffroth, Richwood, $12,720; Fayette Co., Sect. "K" Hillsboro-Washington C. H. Rd., constructing bridge, to Middle States Constr. Co., 524 East Hudson St., Columbus, $9,780. Noted June 22.

O., Akron—Summit Co. grading and paving Kenmore-Mogadore Rd., Cuyahoga Falls-Middlebury Rd. and Portage Lakes Dr., to T. E. McShaffrey Constr. Co., 171 South Forge St., $34,658, $39,668 and $65,875 respectively; Tallmadge Ave. extension, to H. Gilbert, Akron, $72,365. Noted June 22.

O., Canton—Paving 1 mi. Harrison Ave. from Navarre Rd. S. W. to corporation line, to Natl. Asphalt Paving Co., Canton, $131,285, Young Ave. N. E. from tracks of Wheeling & Lake Erie R.R. to Mahoning Rd., N. E. and 17th St. N. E. from Market Ave. N. to Cherry Ave., N. E., to Burd Constr. Co., 1043 Spring Ave., N. E., $53,704 and $4,574 respectively, all asphalt; 18th St. N. W. from Market Ave. N. to Yale Ave. N. W., etc., and Savannah Ave. N. E. from 7th to 9th Sts. N. E., to Garaux Bros., Court Ave. and Reynold Pl., S. W., $40,005 and $13,180 respectively, 15th St. S. E. and N. E. from Allen to Cleveland Aves., to Wise Bros., $136,691, all brick.

O., Cleveland—Paving St. Olga and St. Tichon Aves., to Burnett & Hathaway, Society for Savings Bldg., $24,473; Hazeldell Ave., to Freshwater Constr. Co., Natl. Bldg., $13,624. Noted June 15.

Michigan—State Hy. Dept., Lansing, grading and surfacing 5.97 mi. State Trunk Line Rd. 27-9, Sect. A, Sanilac Co., to Alzina Constr. Co., General Motors Bldg., Detroit, 15,415 cu.yd. excav. $0.45, 166.6 cu.yd. 1:2:4 concrete $17, 234.3 cu.yd. 1:3:6 concrete $16, 56,037 sq.yd. gravel $0.87, total $63,957; 7.043 mi. State Trunk Line Rd. 60-1, Sects. A, C and D, Cass Co., to Highway Improvement Co., South Bend, Ind., 39,853 cu.yd. excav. $0.60, 96.9 cu.yd. 1:2:4 concrete $15, 21.1 cu.yd. 1:3:6 concrete $14, 72,263 sq.yd. waterbound macadam $1.48, $136,202. Noted May 4.

Michigan—State Hy. Dept., Lansing, grading and surfacing 6.135 mi. Federal Aid Project 57, Sects. B and C, to Willite Road Constr. Co., Union Trust Bldg., Detroit, 35,093 cu.yd. excav. $0.55, 225.7 cu. yd. 1:2:4, 198.7 cu.yd. 1:2½:5 and 280.5

Streets and Roads (Continued)

cu.yd. 1:3:6 concrete $14, 65,795 sq.yd. rein. bituminous pavement $2.05, total $170,066. Noted June 8.

Mich., Detroit—To R. J. Powelson Co., 6445 Iroquois Ave., paving Alley 1472, $3,867, Alley 1477, $2,980, Alley 1478, $5,182, Alley 1480, $2,375; J. Porath, 34 McGraw Bldg., Alley 1473, $3,169, Alley 1474, $2,985, Alley 1475, $938; Mincel & Zanni, Detroit, Alley 1476, $1,516; T. E. Currie, 20 McGraw Bldg., Alley 1479, $5,539, Alley 1481, $4,325, Alley 1482, $3,291, Alley 1483, $3,218. Noted June 22.

Mich., Ironwood—For 23,000 sq.yd. tar macadam pavement on various streets, also concrete curb and gutter, to Nieuwenkamp & Thompson, Ironwood, $75,200.

Ill., Benld—Paving 13,000 sq.yd. various streets, to L. Clotfelter, Hillsboro, $59,811. Noted May 25.

Ill., Lincoln—Bd. Local Impvts., brick paving various streets, to H. K. Rhoads, Lincoln, $60,000, and Hoffman & Small, $10,000. Noted June 1.

Wisconsin—State Hy. Comn., Madison, Arkdale—Wisconsin Rapids Rd., Project 250, Adams Co., to E. A. Bloss, La Crosse, 16,644 cu.yd. earth excav. $0.27, 4,824 cu.yd. surfacing $0.75, etc., total $9,379; New Lisbon-Mauston Rd. Project 280, Juneau Co., to Young & Austin, Sparta, 18,081 cu.yd. earth excav. $0.30, 5,850 cu.yd. gravel surfacing $3.25; 1,000 cu.yd. sand surfacing $.75, etc., total $33,742; Coloma-Wautoma Rd., Project 283, Waushara Co., to Drew, Johnston & Blystone, Endeavor, 22,561 cu.yd. earth excav. $.29, 10,531 cu.yd. gravel $1.25 first mile or less and $0.25 each additional ½ mi., etc., total $23,376. Noted June 15.

Wisconsin—State Hy. Comn., Madison, surfacing Spooner-Rice Lake Rd., Project 90, Washburn Co., 7,786 cu.yd. gravel surfacing, to S. J. Groves & Sons, Globe Bldg., Duluth, Minn., $22,893. Noted June 1.

Wis., Milwaukee—Grade separation 1st Ave. and Dakota St., to R. H. Gumz, 831 13th Ave., Milwaukee, $122,479.

Ia., Algona—Paving various streets to Empire Constr. Co., 308 7th St., Des Moines, 22,350 sq.yd. granite concrete $2.75 per sq. yd., 2,400 sq.yd. limestone concrete $2.51. Noted May 4.

Ia., Keokuk—Concrete paving 10,000 sq.yd. various streets, to Cameron, Joyce & Co., Keokuk, $2.20 per sq.yd.; 2,360 sq.yd. alleys, to Keokuk Quarry & Constr. Co., Keokuk, $2.27. Noted June 1.

Ia., Waterloo—Black Hawk Co., grading and paving 17.17 mi. Hawkeye Highway, Federal Aid Project 62, from her east to Buchanan Co. line and from Cedar Falls west to Grundy Co. line, 49,146 cu.yd. excav. 181,475.8 sq.yd. pavement, to Northern States Contg. Co., St. Paul, Minn., $497,145. Noted May 25.

Minn., Glenwood—Pope Co., Job 2201, 57,225 cu.yd. earth and 400 cu.yd. loose rock excav., 78,131 cu.yd. overhaul, culverts, to H. A. Hallum, Glenwood, $14,558; Job 2202, 34,238 cu.yd. earth and 100 cu.yd. loose rock excav., 43,744 cu.yd. overhaul, culverts, to G. H. Clear Co., Glenwood, $8,739; Job 2203, 7,422 cu.yd. excav., 3,222 cu.yd. overhaul, to L. E. Crown, Glenwood, $3,215. Noted May 4.

South Dakota—State Hy. Dept., Pierre, gravel surfacing 17 mi. Federal Aid Project 40, McCook Co., incl. 25,469 cu.yd. gravel, to Lindehugel & Barthlow, Spencer, $29,897. Noted June 1.

Montana—State Hy. Dept., Helena, grading, gravel surfacing and building bridges on 4.4 mi. Federal Aid Project 169, from Three Forks east, Gallatin Co., road work to H. Downer, Deaver, Wyo., $29,948; bridges to Illinois Steel Bridge Co., 552 Gillfillan Bldg., St. Paul, Minn., $29,326. Noted May 4.

Montana—State Hy. Dept., Helena, grading 2.65 mi. and surfacing 4.77 mi. Yellowstone Trail, Federal Aid Projects 44-B and 82-D, Gallatin Co., to Pioneer Constr. Co., Bozeman, 12,960 cu.yd. excav., $0.225 per cu.yd., 9,553 cu.yd. gravel $1.80, 38.76 cu.yd. Class A concrete $22 and 29.17 cu.yd. Class B $20, etc., total $27,708, engrs. estimate $31,335; 7.36 mi. Rondo-Yarnell Rd., Federal Aid Project 145-A, Lincoln Co., to Gates & Solberg Bros., Wolf Point, 21,513 cu.yd. common excav. $0.35, 12,720 cu.yd. intermediate excav. $0.65, 11,152 cu.yd. rock $1.12, 11.4 acres grubbing $150, etc., total $38,238, engrs. estimate $44,345; 10.19 mi. Flint Creek Rd., Federal Aid Project 78, Granite Co., to Rich & Markus, Missoula, 67,918 cu.yd. excav. $0.27, 10,392 cu.yd. intermediate $0.40, and 13,171 cu.yd. rock $1, 5,131 cu.yd. crushed gravel $1.90, 86.06 cu. yd. Class B concrete $20, etc, total $64,268, engrs. estimate $80,428. Noted June 8.

Tex., McKinney—Collin Co.—Grading and surfacing 37.7 mi. Sects. A, B, C, D and E, State Highway 5-A, to Tibbets Constr. Co., Edrington Bank Bldg., Ft. Worth, $385,130. All materials furnished by county.

Tex., McKinney—Collin Co. surfacing 11.06 mi. Wylie Rd. Dist. 15, to D. H. Purvis & Son, Ft. Worth, $32,926. Noted May 25.

Tex., Marshall—Harrison Co. grading gravel surfacing, etc., (1) 14.2 mi. State Highway 8 from here to Panola Co. line, (2) 10.79 mi. State Highway 8 from here to Marine Co. line, from Cocke & Turner, Marshall, (1) $86,765, (2) $54,012; McClung Constr. Co., Cleburne, (1) $94,915, (2) $60,833; C. W. Burgess, 501 Dallas County State Bank Bldg., Dallas, (1) $97,238, (2) $56,400. Noted June 15.

Col., Denver—Grading and bridging 3.3 mi. Parmalee Gulch Rd., 20 ft., to C. Wells & Co., 1642 Pearl St., $18,526; paving 12 blocks Alley Paving Dist. 83, and 12 blocks Alley Paving Dist. 82, 16-20 ft., concrete, to W. F. Pigg & Son, Engineers Bldg., $23,851 and $22,839 respectively.

Nevada—State Hy. Comn., Carson City, grading, gravel surfacing and building culverts on 5 mi. Sect. D-1, Route 2, Lincoln Highway, 1.5 mi. west of Franchmans to 3.5 mi. east of same, 10 ft. wide, Churchill Co., to J. N. Tedford, Fallon, $29,977. Noted June 8.

Arizona—State Hy. Dept., Phoenix, grading, surfacing and building structures on 32.2381 mi. Holbrook-Winslow Highway, Federal Aid Project 40, Schedule (1) from Sta. 905 plus 79-1325 plus 00, to Hunt, Stratton & Larson, Snowflake, 4,682 cu.yd. excav. $0.27, $19,155 cu.yd. excav. $0.15 and 820 cu.yd. excav. $0.75; 10,534 cu.yd. surfacing $0.48, 316,571 sta.yd. surfacing overhaul $.009, 232 cu.yd. Class A concrete $16, 85 cu.yd. Class B $14 and 72 cu.yd. Class C $13, 12,929 lb. reinforcing $0.04, etc., total $24,295; Schedule 2, Sta. 1325-1745, to Tanner Bros., St. Joseph, 2,511 cu.yd. excav. $0.27, 34,760 cu.yd. excav. $0.14, 577 cu.yd. excav. $0.60, and 576 cu.yd. excav. $0.15, 15 cu.yd. Class A concrete, $17, 132 cu.yd. Class B $15 and 64 cu.yd. Class C, $15, 10,627 cu.yd. surfacing $0.45, 574,921 sta.yd. surfacing overhaul $0.01 etc., total $22,663; Schedule 3, Sta. 1745-2165, to Cashion, Caldwell Constr. Co., 33 East Adams St., 3,268 cu.yd. excav. $0.28, 35,444 cu.yd. borrow $0.18, 704 cu.yd. excav. $0.50 and 269 cu.yd. excav. $0.235, 10,449 cu.yd. surfacing $0.45, 365,715 sta.yd. surfacing overhaul $0.01, 69 cu.yd. Class A concrete $15, 89 cu.yd. Class B $14 and 206 cu.yd. Class C $14, 831 cu.yd. gravel base $1.25, etc., total $25,423; Schedule 4, Sta. 2165-2628 plus 47, to S. E. Rogers, Snowflake, 3,276 cu.yd. excav. $0.28, 33,362 cu.yd. borrow $0.16, 762 cu.yd. excav. $0.75 and 416 cu.yd. excav. $0.15, 11,070 cu.yd. surfacing $0.48, 791,433 sta.yd. surfacing overhaul $0.009, 730 cu.yd. gravel base $1.50, 6 cu.yd. Class A concrete $22, 120 cu.yd. Class B $15 and 182 cu.yd. Class C $13, etc., total $27,914.

Wash., Aberdeen—Concrete paving G and H Sts., to Haukeli, Hegg & Co., Aberdeen, $28,427. Engrs. est. $27,000.

Cal., Glendale—Grading, oiling, cement curbs and walks, Maple and Oak Sts. et al., to P. L. Ferry, 614 East Acacia St., $36,250.

Cal., National City—Grading and concrete paving various streets, to Fairchild-Gilmore-Wilton Co., Los Angeles Ry. Bldg. Los Angeles, $27,500. Noted June 22.

Cal., San Diego—Bd. Supervs. San Diego Co., concrete paving Mission Rd. from Camp Kearney easterly, to H. H. Peterson, 3044 Goldsmith St., $96,084. County will furnish cement and crushed rock. Noted June 15.

Cal., Stockton—Improving North Center, North Eldorado, Arcade and Noble Sts., etc., to C. Moreing, Commercial & Savings Bldg., 12,048 cu.yd. cut, $0.60 per cu.yd.; 4,634 cu.yd. fill, $0.40; 20,476 ft. curb and gutter, $0.95; 100,469 ft. 4 in. walks, $0.20; 272,249 ft. 2 in. asphalt macadam on 4 in. gravel, $0.135; total $85,382.

Ont., Cobourg—Paving 20,000 sq.yd. King St., bithulithic on 6 in. concrete, to Warren Bituminous Paving Co., 54 University Ave., Toronto, $118,000. Noted June 1.

Ont., Mimico—Paving 12,000 sq.yd., concrete, to R. C. Huffman, Stop 17 Lake Shore Rd., $45,000.

Ont., Niagara Falls—H. H. Beam, engr., paving 3.5 mi. Portage and Chipewa Rds., asphalt penetration, for Suburban Rd. Comn., to McRae, Campaigne & Cook, Niagara Falls, $60,645.

Ont., Palmerston—Concrete pavement on Main St., to Brennan Contg. Co., Melrose Ave., Hamilton. Engrs. est. $55,000. Noted May 25.

Ont., St. Catharines—W. P. Near, city engr., pavements and sidewalks, to Newman Bros. and A. Longley, St. Catharines, $42,000. Noted May 18.

Ont., Toronto—York Twp., sidewalks on 11 streets, to G. Thompson, 40 Jarvis St.; 3 streets, to Ruscica Bros., 256 Ontario St.; 2 streets, to W. E. Taylor, 22 Falcon St. Total $40,000.

Ont., Walkerton—Paving Station Rd., asphaltic concrete, to Warren Bituminous Paving Co., 54 University Ave., Toronto. Engrs. est. $65,000. Noted June 1.

Ont., Wingham—Concrete pavements on Josephine St. and Diagonal Rd., to W. C. Brennan Contg. Co., Melrose Ave., Hamilton. Engrs. est. $40,000. Noted June 1.

Industrial Works

PROPOSED WORK

Me., Pejepscot—Pejepscot Paper Co., Brunswick, plans extension to plant, here. $1,000,000. Architect not selected.

Vt., Rutland—Rutland Sash & Door Co. plans 2 story, brick and timber mill. $50,000. Private plans.

R. I., Providence—W. P. Hamblin, Inc., c/o J. W. Foster, archt., 46 Narragansett St., having plans prepared 1 story, 65 x 200 ft. brick and concrete garage and service shop. $40,000.

Conn., Manchester—Orford Soap Co., Hillard St., soon takes bids 2 and 3 story, 73 x 150 ft. brick and concrete addition to plant, Hillard St. $60,000. Private plans.

N. Y., Batavia—C. Mancuso & Son, 322 Ellicott St., plans 2 story, 81 x 100 ft., brick and terra cotta garage and salesroom, East Main St. $40,000. Architect not announced.

N. J., Gloucester City—A. W. Grant, Harrison Bldg., Phila., soon takes bids 1 and 2 story, 100 x 500 ft. factory, here $500,000. A. W. Akinoff, Harrison Bldg., Phila., engr.

Pa., Butler—Rieck McJunkin Dairy Co., Forbes St., Pittsburgh, having plans prepared by A. Daniels, archt., c/o owner, remodeling 2 and 3 story ice cream plant and dairy, South McKean and Wayne Sts $50,000.

Pa., Cambridge Springs—Blystone Mfg. Co., Cambridge Springs, plans 2 story, 40 x 96 ft. and 1 story, 90 x 400 ft. concrete and tile factory, to replace one recently destroyed by fire. Private plans.

Va., Newmarket—E. T. Brown, president and organizer private company, plans power plant, 125 hp., for development on Pits Springs Run River. Engineer not announced.

Va., Radford—Having plans prepared and will soon vote on $115,000 bonds for power and light plant. W. E. Gilbert, mayor.

La., New Orleans—Eng. Dept. of Bd. Port Comrs., 1 Canal St., preparing plans for sacking plant on site adjoining grain elevator. $162,000.

O., Cleveland—Blodgett-Beckley Co., 615 Huron Rd., having plans prepared by Hadlow & Hick, archts., Finance Bldg., 2 story, brick, steel and concrete, Central Ave., near East 14th St. $50,000.

O., Cleveland—Crucible Steel Castings Co., Canal Rd., having plans prepared by G. S. Rider & Co., archts. and engrs., Century Bldg., 1 story, brick and steel foundry, Almira and West 98th St. $100,000.

O., Cleveland—Kronheim Furniture Mfg. Co., 2043 East 55th St., having plans prepared by Steffens & Steffens, archts., 1029 Williamson Bldg., 4 story, 56 x 130 ft., brick and steel factory and warehouse. $75,000.

O., Cleveland—M. Sobel, 10019 Parkgate Ave., had plans prepared 1 story, 42 x 120 ft., brick and steel garage, 2526 Cedar Ave. $40,000. Private plans.

O., Painesville—See "Buildings."

Wis., West Bend—West Bend Aluminum Co. having plans prepared by Federal Eng. Co., engrs., 444 Milwaukee St., Milwaukee, 1 story, 20 x 80 ft., brick and steel boiler house, plain foundation. $45,000.

Tex., Refugio—Refugio Glass Wks., Inc., Natl. Bank of Commerce Bldg., San Antonio, having plans prepared large glass bottle factory, here, capacity 50,000 bottles per day. $75,000. W. M. Stephenson, Pres. Private plans.

Okla., Ardmore—Amerada Petroleum Co., 241 Kennedy Bldg., Tulsa, plans gasoline extraction plant near here in Amerada Oil Field. $100,000.

Cal., Napa—California Prune & Apricot Growers' Assn., Market and San Antonio Sts., had plans prepared 141 x 144 ft. cannery, rein.-con. $75,000. Private plans.

N. S., North Sydney—Cape Breton Cold Storage Co., North Sydney, plans cold storage plant. $200,000. Address J. Clarke, c/o owner. Private plans.

Industrial Works (Continued)

Ont., Toronto—Toronto Wet Wash Laundry Co., 11 Dundas St. W., having plans prepared by Harkness, Loudon & Hertzberg, archts., Confederation Life Bldg., 2 story, 40 x 60 ft. rein.-con., brick and steel laundry, Dundas St. $65,000.

BIDS DESIRED

Conn., South Manchester—F. T. Blish Hardware Co., Main St., taking bids 2 story, 42 x 165 ft. brick and timber warehouse, rear Main St. $40,000. B. A. Sellew, 721 Main St., Hartford, archts. and engrs.

Pa., Erie—Union Storage Co., 819 Commerce Bldg., and J. F. Wadsworth, engr., Commerce Bldg., taking bids 8 story, 78 x 100 ft. storage plant, rein.-con.

Fla., Gainesville—July 3, by Bd. Pub. Wks., enlarging and improving light and water plant. G. H. Cairns, city mgr.

Fla., Homestead—July 28, by S. E. Livingston, mayor and Town Council, constructing electric light plant. R. E. Edwards, clk.; adv. this issue.

O., Cleveland—July 5, by W. S. Ferguson Co., archts., 1900 Euclid Ave., 3 story, 140 x 148 ft., brick, steel and concrete service station, plain foundation, East 25th St. near Payne Ave., for Studebaker Corp., 2020 Euclid Ave. $250,000. E. J. Murane, sales dir.

O., Cleveland—F. B. Strawn, 43 The Arcade, taking bids 1 story, 70 x 88 ft., brick and steel garage, 12510 Penobscot Ave. $40,000. E. E. Smith, Williamson Bldg., archt.

O., Cleveland—C. W. Fessenden, 411 Woodland Ave., taking bids 1 story, 50 x 141 ft., brick and steel garage and commercial building, East 116th St. and Buckeye Rd., to A. A. Lane Constr. Co., 1869 East 55th St. $50,000.

O., Cleveland—P. Matzinger & Co., archts., Caxton Bldg., taking bids 3 story, 52 x 70 ft., brick and steel garage and commercial building, plain foundation, Chester Ave. and East 20th St., for A. Kohn & Sons Investment Co., 2380 Canal Rd. $75,000. Noted Dec. 15.

O., Cleveland—E. Schimmelman, 412 Engineers Bldg., taking bids 1 story, 49 x 50 ft. and 54 x 84 ft. brick and steel garage and store building, plain foundation, East 152nd St. and St. Clair Ave. $50,000. Private plans.

Ind., Michigan City—Sullivan Mchy. Co., 122 South Michigan Ave. and A. S. Coffin, archt., 39 West Adams St., taking bids 2 story, 400 x 550 ft. and 2 story 60 x 400 ft. brick and steel factories. $1,000,000.

Mich., Detroit—A. Kahn, archt., 1000 Marquette Bldg., taking bids 2 story, 40 x 106 ft. rein.-con. and brick factory, plain foundation, Rose and 16th Sts., for Burr-Patterson Co., 4211 Woodward Ave. $40,000.

Mich., Plymouth—See "Buildings."

Ill., Chicago—W. F. Bleck & Co., 1846 North Lamon Ave., receiving bids 1 and 2 story, 180 x 200 ft., rein.-con., brick and steel factory, Lamon Ave. near Bloomingdale Ave. $200,000. H. H. Green, 304 South Wabash Ave., archt. Noted June 15.

Ill., Chicago—M. M. Fishman, archt., 118 North La Salle St., receiving bids 3 story, 133 x 166 ft., rein.-con., brick and steel factory, Irving Park Blvd., and Hermitage Ave., for Natures Rival Co., 306 South Franklin St. $180,000.

BIDS RECEIVED

Minn., Minneapolis—J. A. Ridgway, secy. Bd. Park Comrs., opened bids June 19, 3 story, 43 x 144 ft. brick and tile shops and warehouse, from Madsen Constr. Co., 848 Builders Exch. Bldg., $41,450; F. N. Hegg, 2942 Nicollet Ave., $43,369. J. C. Nelson & Son, 915 Bway. N. E., $45,200.

CONTRACTS AWARDED

Vt., Brattleboro — Presby-Leland Co. Barre, cutting sheds, machine shop, office and other storage sheds, all 1 story, to A. B. Lane, 38 Highland Ave., Barre. Archts. est., $100,000. Noted May 25.

Mass., Boston—Peterboro Realty Trust Co., 18 Tremont St., 2 story, 75 x 170 ft. brick and rein.-con. garage, Kilmarnock Rd., to Snider & Druker, 18 Tremont St. Archts. est. $70,000.

Mass., Lawrence—Amer. Woolen Co., 245 State St., Boston, 6 story, 100 x 500 ft. rein.-con. and brick addition at Washington Mills, here, to Turner Constr. Co., 178 Tremont St., Boston. Archts. est. $500,000. Noted March 9.

Mass., Lynn—Ravin & Gorden, Lynn, 1 story, 79 x 201 ft. brick and concrete factory, Pleasant St., to N. Hurwitz, 294 Washington St., Boston. Archts. est. $50,000.

Mass., South Boston (Boston P. O.)—H. Norman, 20 Lawrence Ave., Boston, will build 3 story, 50 x 167 ft. brick and timber factory, A St., by day labor. $75,000. Dow, Harlow & Kimball, 101 Tremont St., Boston, archts.

R. I., Pawtucket—Perry & Whipple, archts. and engrs., Rhode Island Hospital Trust Bldg., Providence, 6 story, 85 x 190 ft. brick and timber addition to plant, plain foundation, here, to C. S. Cunningham & Sons Constr. Co., 80 Boylston St., Boston, Mass., for Hope Webbing Co., 1005 Main St. Archts. est. $200,000. Noted June 15.

Conn., Danbury—Tweedy Silk Mills, Inc., East Franklin St., 1 story, 60 x 120 ft. brick and steel weave shed, 1 story, 40 x 60 ft. brick power house, 1 story dye house, and 2 story office, to L. F. Sweeney, 26 Montgomery St. Archts. est. $40,000 to $50,000.

Conn., Hartford—Buck & Sheldon, Inc., archts. and engrs., 60 Prospect St., 1 story, 100 x 104 ft. brick and timber plant, Franklin Ave. and Bolton St., to Hartlett-Brainerd Co., 252 Asylum St., for R. S. Peck & Co., 26 High St. Archts. est. $40,000. Noted June 22.

Conn., Thompsonville—Bigelow-Hartford Carpet Co., Tariff St., 111 x 227 ft. jacquard mill, 113 x 145 ft. worsted mill and 82 x 142 ft. dyehouse addition, all 1 story, brick and steel, plain foundations, to L. E. Locke & Sons Co. South Union St., Lawrence. $1,000,000.

N. Y., Buffalo—Knowlton Warehouse Co., 93 Perry St., 5 story, 100 x 150 ft. warehouse, Perry and Mississippi Sts., to Turner Constr. Co., 244 Madison Ave., New York. Noted June 22.

N. Y., New York—North Dock Realty Co., Inc., c/o J. J. Dunnigan, archt. and engr., 394 East 150th St., 1 story, 100 x 500 ft. garage, West 49th St., by day labor.

N. Y., New York—See "Buildings."

N. J., Mt. Holly — Folsom & Stanton, archts., 10 South La Salle St., Phila., 1 story, 40 x 100 ft., brick and steel garage, plain foundation, here, to McCloskey & Co., 1620 Thompson St., Phila., for W. D. Marren, Mt. Holly. Archts est. $50,000. Noted June 8.

Pa., Chambersburg—A. C. Wood, engr., Stock Exch. Bldg., Phila., 1 story, 80 x 90 ft. brick and steel power house, plain foundation, to Hofer & Shields, Chambersburg. Noted May 4.

Pa., Greenville—Greenville Steel Car Co., Fort Union St., will build 73 x 390 ft. steel and concrete factory and foundry, by day labor. $200,000. F. A. Conner, genl. mgr.

Pa., Phila.—See "Buildings."

Pa., Phila.—F. Hosebach, 2415 South St., 2 story, 64 x 76 ft. brick and steel factory, plain foundation, 12th and Brown Sts., to J. N. Gill, Otis Bldg.

Pa., Phila.—T. B. Martindale, Broad and Allegheny Aves., 2 story, 100 x 265 ft. brick and steel service and sales building, plain foundation, Broad and Allegheny Aves., to Bowden Constr. Co., 1935 Chestnut St. Archts. $105,000.

Pa., Phila.—Phila. Electric Co., 100 Chestnut St., 1 story, 62 x 70 ft. brick and steel substation, plain foundation, 56th and Race Sts., to F. M. Harris Co., 1520 Parish St.

Pa., Phila.—Phila. Electric Co., 1000 Chestnut St., 2 story, 66 x 114 ft. brick and steel substation plain foundation, 6th and Federal Sts., to Irwin & Leighton, 126 North 12th St., $60,000. Noted June 15.

Md., Hagerstown—Pennsylvania R.R., Broad St. Sta., Phila., Pa., roundhouse and terminal facilities, here, to W. W. Boxley, Roanoke, Va. Engrs. est. $250,000.

W. Va., Bluefield—B. L. Bailey, 4 story, 83 x 121 ft., rein.-con., brick and steel garage, to W. T. Owen, Earle Ave. About $40,000. Cost plus percentage basis.

W. Va., Fairmont—Dattile Fruit Co., 3 and 7 story, 68 x 70 ft., warehouse, to Valley Eng. Co., Fairmont. Engrs. est. $40,000. Noted May 4.

W. Va., Huntington—Consolidated Lignt, Heat & Power Co., will build 2 story, 28 x 64 ft. rein.-con., brick and steel sub-station, 2nd Ave., by day labor. Private plans.

W. Va., Wheeling—Trimble & Leitz, 112 19th St., constructing 2 story, rein.-con., brick and steel addition, at 112 19th St., to J. Butts, 191 16th St. Archts. est. $40,000.

N. C., Gastonia—Loray Mills, controlled by Jenckes Spinning Co., 335 Barton St., Pawtucket, R. I., spinning mill, here, to Aberthaw Constr. Co., Forsyth Bldg., Atlanta, Ga. $200,000.

N. C., Spindale—Spinners Processing Co., constructing 2 story, 137 x 234 ft., brick mill, to Potter & Shackelford, Inc., Greenville, S. C., $80,000.

O., Cleveland—Representative Constr. Co., Hanna Bldg., will build 1 story, 58 x 160 ft., brick and steel garage and workshop, 4008 East 89th St., by day labor. $50,000. Private plans.

O., Cleveland—G. H. Thorne, 2104 East 22nd St., 1 story, 36 x 86 ft., garage and sales room, brick and timber, plain foundation, to C. Vivian & Son, 2533 Scovill Ave. Archts. est. $40,000.

Ill., Chicago—Shea-Smith & Co. 322 Federal St., 4 story, 86 x 150 ft., printing plant, rein.-con., brick and steel, West Congress St. and Ashland Ave., to J. W. Snyder & Co., 122 South Michigan Ave. $250,000.

Wis., Kenosha—G. L. Rose, Pub. Serv. Bldg., 1 story, 66 x 126 ft., garage, steel and corrugated iron, plain foundation, Sheridan Rd., to Eslien Sheet Metal Wks., 1001 30th St., Milwaukee. Engrs. est. $40,000.

Wis., Manitowoc—A. M. Ritchei Sons Co., South 8th and Madison Sts., 1 and 2 story, 110 x 122 ft. vinegar factory, brick, rein.-con. and steel, plain foundation, to L. Pentzie, Savings Bank Bldg., $40,000. Noted March 30.

Wis., Milwaukee—Sixth St. Garage Co., c/o M. Tullgren & Sons, archts., 425 East Water St., 5 story, 100 x 150 ft., brick and concrete, garage, plain foundation 6th St. and Grand Ave., to S. M. Siesel, 105 Wells St., Engrs. est. $200,000. Noted June 8.

Minn., Minneapolis—Fulton Bag and Cotton Mills, 643 Security Bldg., 4 story, rein.-con. and brick factory and office, East Hennepin Ave. and Taft St., to H. N. Leighton Co., 127 South 10th St., $230,000. Noted March 30.

Kan., Atchison—Pillsbury Flour Mills Co., Metropolitan Life Bldg., Minneapolis, Minn., additional unit to flour mill, 72 x 148 ft., rein.-con., incl. elevator, transformer house, offices, etc., to Fegles Constr. Co., 7th St. and 1st Ave. N., Minneapolis, Minn., $225,000.

Ariz., Morenci—Stargo Mines, Inc. will build cyanide mill, rein.-con., by day labor. $75,000. General Eng. Co., 159 Pierpont Ave., Salt Lake City, Utah, engrs.

Cal., Merced—Merced Irrigation Dist. will build 1 story, hollow tile and steel, garage and machine shop, by day labor. Former bids rejected. I. W. Hoover, Planada, archt. Noted June 1.

Cal., San Leandro — Supervs. Alameda Co., Oakland, constructing 1 story power and 1 story laundry, tile, on County Infirmary Site, here, to M. E. Hopper & Sons, 1117 Webster St., Oakland, $122,545. Noted May 4.

Ont., Stamford—Canadian Carborundum Co., Montrose, 2 story, 50 x 100 ft. concrete, brick and steel factory addition, to Robertson Constr. Co., Stamford.

Buildings

PROPOSED WORK

Mass., Dorchester (Boston P. O.) — Schools—City Schoolhouse Dept., 1009 City Hall, Boston, plans 20 room, Mather Dist., $450,000; 16 room, Blue Hill Ave., $320,000; both brick. Architect not selected.

Mass., New Bedford—Parish House and Auditorium—St. James Church, 223 County St., plans 3 story, brick and concrete parish house and auditorium, County and Wash Sts. $150,000. Architect not selected.

Conn., Hartford—School—School Bd. plans 2 story, brick and steel addition to Chauncy Harris Grammar School. $150,000. Whiton & McMahon, 36 Pearl St., archts.

N. Y., Brooklyn — Theatre and Store — Times Plaza Theatre, c/o D. Lucas, archt. and engr., 98-3rd Ave., soon takes bids 2 story, brick, steel and stone, plain foundation, Dean St. $250,000.

N. Y., New York—Hotel—United Hotels Co., 25 West 45th St., having preliminary plans prepared by G. B. Post & Sons, archts. and engrs., 101 Park Ave., 15 story, brick, steel and stone, plain foundation, 45th and 46th Sts., Madison and Vanderbilt Aves. $8,000,000.

N. Y., New York—School—St. Francis De Sales, c/o F. J. Murphy, archt. and engr., 405 Lexington Ave., soon takes bids 4 story, brick, steel and stone, plain foundation, 116 East 97th St. $150,000.

N. Y., New York — Synagogue — Hebrew Tabernacle Assn., c/o Sommerfield & Steckler, archts. and engrs., 31 Union Sq., soon takes bids 1 story, 75 x 90 ft., brick, steel and stone, plain foundation, 505 West 161st St. $150,000.

N. Y., New York—Y. M. C. A., 2 West 45th St., having plans prepared by J. F. Jackson, archt. and engr., 137 East 45th St., 20 story, 75 x 100 ft., brick, steel and stone, plain foundation, 333 West 56th St. $1,200,000.

N. J., Maplewood—High School—South Orange Bd. Educ., South Orange, plans brick, steel and stone, plain foundation. Academy St. and Parker Ave., here. $500,000.

Pa., Phila.—Church and Parsonage—Roman Catholic Church of Incarnation, c/o M. J. Brady, pastor, 5th and Lindley Aves., plans 2 story, 60 x 160 ft. church and 3

Buildings (Continued)

story, 40 x 50 ft. parsonage, brick and stone, 5th and Lindley Aves. $300,000. F. F. Durang, 1220 Locust St., archt.

Pa., Phila.—Office—Mastbaum Bros. and Fleitcher, 1424 South Penn Sq., soon takes bids 10 story office, Broad and Pine Sts. $1,000,000. Hoffman-Henon Co., Finance Bldg., archts. Noted Feb. 23.

Pa., Pittsburgh—Sales, etc.—Mueller Bros., 5101 Baum Blvd., plans 80 x 60 ft. sales and service building, Baum Blvd. and Woodworth St. Architect not selected.

Pa., Pittsburgh—Temple—Syria Improvement Assn., Syria Temple, having preliminary sketches made by R. G. Schmid, archt., 154 West Randolph St., Chicago, brick and steel addition, Bigelow Blvd., near 5th Ave. $150,000.

Pa., Uniontown—Store—Randolph Desk Co., c/o R. L. Randolph, 1859 Prospect St., Cleveland, O., having sketches made by H. W. Altman, archt., Fayette Title & Trust Bldg., 3 story, brick. $200,000.

W. Va., Charleston—Store and Lodge—Scottish Rite Masons (Colored), c/o J. C. Norman, archt., K. of P. Bldg., plans 4 or 5 story, 90 x 94 ft., brick, steel and terra cotta, Bradford and Washington Sts. $152,000.

O., Cleveland—Children's Hospital and Administration—City plans 2 and 3 story, brick, steel and concrete, Warrensville Farm. $162,000. R. D. Perkins, welfare dir. Architect not selected.

O., Cleveland—Commercial and Market—Miles Ave. Market House, c/o Conley-Degraw Co., 1900 Euclid Ave., having plans prepared by De Lorenzo Constr. Co., archts., Guardian Bldg., 1 story, 100 x 150 ft., brick and steel, Miles Ave. near East 113th St. $150,000.

O., Cleveland — Temple — Tifereth Israel Congregation, c/o H. Silver, rabbi, East 55th St. and Scovill Ave., had plans prepared by C. R. Greco, archt., Guardian Bldg., 2 story, brick, steel, concrete and stone, plain foundation, East 105th St. and Ansel Rd. $350,000.

O., Dayton—Store—Schwind Realty Co., Schwind Bldg., having plans prepared by Schenck & Williams, archts., Mutual Home Bldg., 4 story, 80 x 100 ft., rein.-con. and brick, North Main St. $200,000.

O., Painesville—Dormitory, etc.—Lake Erie College for Women having plans prepared by A. Garfield, archt., 913 Natl. City Bldg., Cleveland, 2 story, brick, steel and concrete dormitory and heating plant. $500,000.

O., Zanesville—Schools—Bd. Educ. having plans prepared by F. L. Packard, archt., New Hayden Bldg., Columbus, two 2 story, brick and concrete. $175,000 each.

Ind., Beardsley—School—Bd. Educ. plans 2 story, brick. $150,000. A. H. Elwood & Sons, Elkhart, archts.

Ill., Chicago—Apartment—E. E. Hall, archt., 123 West Madison St., soon receives bids 4 story, 200 x 200 ft., rein.-con., brick and steel, near South Shore Dr. and 75th St., for W. E. Gehring, c/o architect. $500,000.

Ill., Chicago—Apartment—Harris & Jillson, archts., 190 North State St., soon receive bids first unit 14 story apartment. $1,000,000.

Ill., Chicago—Apartment—Marshall & Fox, archts., 721 North Michigan Blvd., preparing plans and receive bids in about one month, for 10 story, 130 x 140 ft., rein.-con., brick and steel, 20-28 East Cedar St., for Cedar Building Corp., c/o architects. $500,000.

Ill., Chicago—Apartment—J. K. Spoor, c/o Essanay Film Mfg. Co., 1333 Argyle St., plans five 14 story apartments on Lake Shore, between Argyle and Ainslie Sts., $5,000,000.

Ill., Chicago—Apartment—A. V. Teisen, archt., 4804 North Kedzie Ave., preparing plans and soon receives bids 3 story, 125 x 180 ft., rein.-con., brick and steel, on North Kedzie Ave. $250,000. Owner's name withheld.

Ill., Chicago—Hotel—N. M. Dunning, archt., 310 South Wabash Ave., preparing plans 6 story addition to Hayes Hotel, University Ave. and 64th S $1,000,000.

Ill., Chicago—Store, etc.—Whitney & Williams, archts., 122 South Michigan Ave., revising plans and soon take bids 3 story, store, café and dance hall, rein.-con., brick and steel. Howard St and Marshfield Ave. $3,000,000. Owner's name withheld.

Ill., Evanston—Apartment—C. Pegler, c/o H. J. Liedberg, archt., 154 West Randolph St., Chicago, having plans prepared 3 story, 100 x 171 ft., rein.-con., brick and steel, at 722 Hinman Ave. $200,000.

Wis., Clinton—High School—Bd. Educ. plans 2 and 3 story 75 x 160 ft. brick, rein.-con. and steel, plain foundation. $150,000. Architect not selected.

Wis., De Pere—Grade School—Bd. Educ. plans 3 story, 75 x 150 ft., brick, rein.-con. and steel. $150,000. Architect not selected.

Wis., Kenosha—Hotel—M. Tullgren & Sons, archts., 425 East Water St., Milwaukee, and L. Hunt, associated archt., 445 Milwaukee St., Milwaukee, take bids about July 8, for Hotel Maywood, 5 story, 66 x 126 ft., brick, steel and concrete, plain foundation, at 274 Main St., here, for S. Schwartz, 888 Sheridan Rd., Waukegan, Ill. $150,000.

Wis., Milwaukee—Apartment—Harris & Jillson, archts., 190 North State St., Chicago, soon takes bids 3 story, 125 x 135 ft., rein.-con., brick and steel. $225,000. Owner's name withheld.

Wis., Milwaukee—Bank—Amer. Exch. Bank, Plankinton Arcade, had plans prepared by Kirchoff & Rose, archts., 221 Grand Ave., 4 story, 70 x 102 ft., brick, steel and concrete, plain foundation, Grand Ave. and 2nd St. $500,000. Noted Jan. 12.

Utah, Salt Lake City—Office and Bank—Continental Natl. Bank, 21 East 2nd St., and Natl. Bank of the Republic, Main St., plan 20 story. G. W. Kelham, Sharon Bldg., San Francisco, archt.

Cal., Alhambra—Schools—Bd. Educ. having plans prepared by Allison & Allison, archts., 1405 Hibernian Bldg., Los Angeles, for grammar school, $125,000 bonds voted; by Hunt & Burns, archts., 701 Laughlin Bldg., Los Angeles, for high school, $350,000 bonds voted.

Cal., Fresno—Lodge—Knights of Pythias had plans prepared by Swartz & Ryland, archts., Rowell Bldg., 4 story, Van Ness Ave. $175,000. Noted June 22.

Cal., Los Angeles—Hospital—St. Vincents Hospital having plans prepared by J. C. Austin, archt., Baker-Detwiler Bldg., 8 story, 60 x 200 ft. hospital and 3 story, 50 x 100 ft. dormitory, rein.-con., brick and steel, concrete foundation, Sunset Blvd. $450,000.

Cal., Los Angeles—Schools—Voted $7,360,000 bonds for new high schools; $10,040,000 bonds for elementary schools. Address Bd. Educ.

Cal., San Bernardino—Hotel—C. B. Phillips, having plans prepared by H. E. Jones, archt., Katz Bldg., 5 story, steel and brick, E St. $208,000.

Que., St. Anne de Beaupré—Church and Monastery—Reverend Fathers Redemptionist, plan to rebuild church and monastery recently destroyed by fire, Main St. $3,500,000. Architect not selected.

BIDS DESIRED

N. Y., Buffalo—School—July 6, by Bd. Educ., 1401 Telephone Bldg., 2 story, 130 x 201 ft., rein.-con., brick and steel, Skillen St. $250,000. Associated Buffalo Architects, 232 Delaware Ave., archts.

N. Y., New York—Bank and Office—July 6, by L. A. Abramson, archt. and engr., 46 West 46th St., 5 story, 50 x 85 ft., brick, steel and stone, plain foundation, 1765 Madison Ave., for Bank of United States, 5th Ave. and 32nd St. $250,000. Noted June 8.

N. Y., New York—School—July 5, by Bd. Educ., 500 Park Ave., P. S. 130, 2nd portion, brick, steel and stone, plain foundation, Hester and Baxter Sts. $300,000. C. B. J. Snyder, Concord St., Brooklyn, archt. and engr. Noted April 2.

N. Y., New York—School—July 5, by Bd. Educ., 500 Park Ave., P. S. 57, brick, steel and stone, plain foundation, 114th St. near 3rd Ave. $250,000. C. B. J. Snyder, Concord St., Brooklyn, archt. and engr.

N. Y., Syracuse—Hotel—July 17, by G. B. Post & Sons, archts. and engrs., 101 Park Ave., New York, 11 story, brick, steel and stone, plain foundation, Harrison and Warren Sts., here, for Syracuse Hotel Corp., Burney Bldg. $2,500,000. Noted Nov. 24.

N. Y., Penn Yan—Hospital—W. N. Wise, chn. building com. of Sailors & Soldiers Memorial Hospital, taking bids 3 story, 39 x 105 ft., brick and concrete. To exceed $150,000. E. F. Stevens, 9 Park St., Boston, archt. Noted March 30.

N. J., Newark—Bank—July 10, by Guilbert & Bettelle, archts. and engrs., 2 Lombardi St., brick and stone, plain foundation, for North Ward Bank. $300,000.

Pa., Phila.—Office and Sales—Carson & Carson, archts., 22 South 15th St., taking bids 10 story, 95 x 191 ft. rein.-con., and brick, plain foundation, 30th and Walnut Sts., for Westinghouse Electric Co., Weidner Bldg. $700,000.

Pa., Phila.—School—July 6, by Bd. Educ. 3 story, 73 x 143 ft. brick, steel and stone, plain foundation, Somerset and Almond Sts. $250,000.

Pa., Pittsburgh—Bank—Logan Trust Co., New Kensington, will build 3 story, 50 x 120 ft. addition, 5th Ave., here. $250,000. Work will be done by separate contract. P. R. L. Hogner, c/o Aluminum Co. of America, New Kensington, archt. Noted May 18.

Pa., Tyrone—Bank and Office—G. S. Idell, archt., 1705 Chestnut St., Phila., taking bids 5 story, 60 x 100 ft. rein.-con. and steel, plain foundation, for Farmers Natl. Bank. $200,000.

N. C., Charlotte—Store—July 3, by Efird Department Store, 208 Fayetteville St., 6 story, 99 x 188 ft. $500,000. L. Asbury, Charlotte, archt.

N. C., Hookerton—High Schools—July 15, by Bd. Educ. Greene Co., Snow Hill, constructing high school here and high school at Waltonsburg. $200,000. G. L. Preacher & Co., Healy Bldg., Atlanta, Ga., and Raleigh, archts.

Tenn., Nashville—Office—June 30, by McKim, Mead & White, archts. and engrs., 101 Park Ave., New York, brick, stone and steel, plain foundation, here, for Caldwell & Co., 214 Union St. $1,000,000.

O., Cleveland—Clubhouse—Slovenian Natl. Home, c/o F. Somrak, 5800 Prosser Ave., taking bids 2 story, 175 x 178 ft., brick, steel and concrete, plain foundation, St. Clair Ave. and East 65th St. $200,000.

O., Dayton — High School — July 13, by Bd. Educ., Roosevelt High School, 3 story, rein.-con. and brick, concrete pile foundation. $250,000. Schenck & Williams, Mutual Home Bldg., archts.

Ind., South Bend—Bank and Office—Amer. Trust Co. taking bids 4 story, 90 x 125 ft. rein.-con., brick and steel. $250,000. K. M. Vitzthum & Co., 21 East Van Buren St., archts.

Mich., East Lansing—College—July 5, by H. H. Halladay, secy. Michigan Agricultural College, 3 story, rein.-con., brick and steel addition, campus. $250,000. E. A. Boyd, 127 West Allegan St., Lansing, archt.

Mich., Houghton—High School—July 15, by School Dist. 1, 3 story, concrete, brick and tile, plain foundation. $400,000. Van Leyen, Schilling, Keough & Reynolds, 3440 Cass Ave., Detroit, archts.

Mich., Plymouth—Penal Institution—July 10, by J. D. Stutzman, supt. Detroit House of Correction, 1441 Alfred St., Detroit, 3 story, 76 x 420 ft. administration building, 3 story, 32 x 328 ft. cell block, 1 and 2 story, 408 x 840 ft. industrial building, and 105 x 130 ft. prison power house, all rein.-con., brick and steel, plain foundation. $2,500,000. A. Kahn, 1000 Marquette Bldg., Detroit, archt.

Wis., Ashland—Bank—July 11, by Ashland Natl. Bank and Kelly & Shefchik, archts., Masonic Bldg., 1 story, brick, concrete and stone, plain foundation. $150,000.

Wis., Janesville—Theatre—July 10, by M. Tullgren & Sons, archts., 425 East Water St., Milwaukee, 1 story, 60 x 198 ft. and 15 x 70 ft., brick and concrete, plain foundation, West Milwaukee St., for D. Jeffris Theatre Co., 14 West Milwaukee St. $150,000.

Wis., Madison — Arcade Store — P. M. Homer, archt., 1 East Main St., taking bids 2 story, 88 x 101 ft., brick, rein.-con. and steel, plain foundation, Mifflin St., for Madison Realty Co., 1 East Main St. $150,000. Noted June 8.

Wis., Milwaukee—Synagogue—H. H. Bruns, archt., 845 26th St., taking bids 70 x 105 ft., brick, tile and concrete, plain foundation, 10th and Lee Sts., for Beth Israel Congregation, c/o S. Michel, 1803 Grand Ave., chn. building com. $150,000

Wis., Schofield—School—July 10, by Bd. Educ. 2 story, 70 x 95 ft., high and grade school, brick, rein.-con. and tile, plain foundation. $150,000. Oppenhamer & Obel, Spencer Bldg., Green Bay, archts.

N. D., Fargo—School—July 17, by Bd. Educ., 2 story, rein.-con., brick, tile and stone, 16th St. and 3rd Ave. $15,000. Keith & Kurke, Equity Bldg., archts. Noted May 18.

Wash., Wenatchee—County Comrs. Chelan Co. taking bids 4 story, 80 x 140 ft., rein.-con. $350,000. V. S. Stimson, Symons Bldg., Spokane, archt.

Cal., Gilroy — Schools — Gilroy Grammar School Dist., taking bids and opens same about July 15, 6 and 14 room schools, both 1 story. $50,000 and $100,000 respectively. Wyckoff & White, Growers Bank Bldg., San Jose, archts.

BIDS RECEIVED

N. Y., New York.—Drill Shed—Armory Bd. opened bids June 22, constructing drill shed for 15th Infantry, 142nd and 143rd Sts., between Lenox and 5th Aves., from Post & McCord, 101 Park Ave., $287,600; Lustig & Weil, 103 Park Ave., $308,572; Bainbridge Constr. Co., 52 Vanderbilt Ave., $314,447. Noted June 15.

Buildings (Continued)

N. Y., New York—School—Bd. Educ., 500 Park Ave., opened bids June 19, P. S. 80, East 120th St. near 1st Ave., from T. A. Clarke Co., 122 Livingston St., Brooklyn, $487,300; Concord Constr. Co., 476 Seneca Ave., Brooklyn, $491,000; P. J. Brennan & Son, 624 Madison Ave., $498,200. Noted June 15.

Minn., St. Paul—High School—Dept. Educ. opened bids June 9, 3 story, 150 x 250 ft. school with 2 story, 48 x 90 ft. wing, rein.-con., brick and tile, Isabel and Congress Sts., from Gauger-Korsmo Constr. Co., 301 Endicott Bldg. $368,944; F. C. Norlander, 408 Metropolitan Bank Bldg., $373,485; W. J. Hoy Co., Metropolitan Opera House Bldg., $390,134.

Wis., Stevens Point—High School—School Bd. opened bids June 23, 2 story, brick, concrete and tile, plain foundation, from Immel Constr. Co., 200 North Main St., Fond du Lac, $124,483; Fluor Bros., 50 State St., Oshkosh, $127,500, Otrich-Shropshire Co., Stevens Point, $132,473. Noted June 15.

CONTRACTS AWARDED

Mass., Brockton—School—St. Patricks Parish, 3 story, 50 x 125 ft. brick and steel with 45 x 50 ft. ell, Bartlett St., to J. B. Dolan, 43 Tremont St., Boston, $150,000.

Mass., Dalton—Community and Auditorium—Crane Memorial Com., 2 story, brick and steel, plain foundation, to D. H. Pike, Renne Ave., Pittsfield. Archts. est. $150,000. Noted Oct. 14.

Conn., Greenwich—Business—B. Harris Constr. Co., 288 Atlantic St., will build 4 story, 50 x 160 ft. brick, stone and steel, Greenwich Ave., by day labor. $150,000. Private plans.

Conn., New Haven—Apartment—F. Von Beren, 185 Church St., 6 story, 55 x 120 ft. brick, stone, terra cotta and steel, plain foundation, Chapel St., to Natl. Constr. Co., Malley Bldg. Archts. est. $200,000.

N. Y., Batavia—High School—Bd. Educ., 3 story, 144 x 200 ft., brick and steel, Ross St., to Laur & Mack Contg. Co., Highland and College Aves., Niagara Falls, $385,420. Noted May 25.

N. Y., Brooklyn—Apartment—S. and M. Diamond, c/o E. M. Adelsohn, archt. and engr., 1778 Pitkin Ave., 4 story, 50 x 110 ft., brick, steel and stone, plain foundation, Benson and 20th Aves., by day labor. $150,000.

N. Y., Brooklyn—Office—S. Ageloff, 26 Court St., will build 2 story, 110 x 200 ft., brick, steel and stone, plain foundation, De Kalb Ave. and Flatbush Ave. extension, by day labor. Archts. est. $300,000. M. Klein, 37 Graham Ave., archt. and engr.

N. Y., Buffalo—Bank, Store and Office—E. B. Green & Sons, archts., 75 Niagara St., constructing Genesee Bldg., 14 story, Main and Genesee Sts., to Turner Constr. Co., 244 Madison Ave., New York.

N. Y., New York—Apartment—Daar Hartman Constr. Co., c/o I. L. Crausman, archt. and engr., 2035 Southern Blvd., 5 story, brick, steel and stone, plain foundation, Grand Ave., by day labor. $200,000.

N. Y., New York—Bank—C. W. Brazer, archt. and engr., 1133 Bway, brick, steel and stone, plain foundation, Bowery, to W. L. Crow Constr. Co., 103 Park Ave., for Citizens Savings Bank, 38 Bowery. Archts. est. $400,000. Noted June 1.

N. Y., New York—Court House—Bd. Estimate and Apportionment, Municipal Bldg., superstructure of court house within area bounded by Centre, Worth, Baxter and Pearl Sts., to G. A. Fuller Co., 175 5th Ave., $4,139,000. Noted June 15.

N. Y., New York—Office, etc.—Lockwood, Green & Co., archts. and engrs., 101 Park Ave., 7 story, office and printing plant, brick, steel and concrete, plain foundation, 219 West 40th St., to J. Stewart & Co., 30 Church St., for New York Tribune, Inc., 154 Nassau St. Archts. est. $500,000. Noted June 1.

N. Y., New York—School—St. Josephs Roman Catholic Church, 1949 Bathgate Ave., 4 story, brick, steel and stone, plain foundation, Bathgate Ave., to Fountain & Choate, 110 East 23rd St. Archts. est. $150,000. Noted April 20.

Pa., McKees Rocks—School—St. Marys Roman Catholic Congregation, 2 story, 87 x 149 ft. brick and steel, Church and Guthrie Sts., to J. A. Bergman & Son, 414 Dinwiddie St., Pittsburg. Engrs. est. $150,000.

Pa., Phila.—Armory and Recreation—Girard College, Girard Ave. and Corinthian St., 2 story, 145 x 308 ft., brick and steel, plain foundation, Girard Ave. and Corinthian St., to Irwin & Leighton, 126 North 12th St. Archts. est. $500,000. Noted June 1.

Pa. Phila.—Convent—H. D. Dagit & Sons, archts., 34 South 17th St., 3 story, 35 x 120 ft. brick, steel and stone, plain foundation, 24th and Lehigh Aves., to Mitchell-Houseworth Co., 2512 North 27th St., for St. Columbas Catholic Church, 24th and Lehigh Aves Archts. est. $150,000. Noted Feb. 9.

Pa., Phila.—Sales, etc.—Traylor Eng. Co., Broad and Lehigh Aves., 8 story, 125 x 205 ft. rein.-con. and brick, plain foundation. Broad and Lehigh Aves., to W. Steele & Sons, 16th and Arch Sts.

Pa., Warminster—School—Christ Home for Children, 2 story, 45 x 100 ft. brick and stone, to A. Betcher, Hatsboro.

N. C., Gastonia—Bank—Third Natl. Bank, 7 story, 52 x 110 ft., steel, granite and brick, to J. A. Jones Constr. Co., Realty Bldg., Charlotte, $290,000. Noted April 6.

N. C., Lexington—Theatre—Lexington Theatre Co., constructing theatre, 1,500 seating capacity, including 3 stores, 18 offices and large arcade, Main St., to Harbin Constr. Co., Lexington, $128,880.

N. C., Thomasville—High School—School Bd., constructing 2 story, general contract to C. V. York, Citizens Bank Bldg., Raleigh, $152,500. Noted June 1.

N. C., Winston-Salem—Auditorium—Constructing auditorium to North Eastern Constr. Co., Charlotte, $350,000. Noted March 16.

La., New Orleans—Medical—W. L. Stevens, archt., Bordeaux Apts., 8 story, rein.-con., brick and terra cotta, Prytania and Aline Sts., to Doullut & Williams, Whitney Bldg., $400,000.

O., Cleveland—School—Holy Family Church, East 131st St. and Chapelside Ave., superstructure of 2 story, 110 x 164 ft., brick, steel and concrete, to W. J. Pierek, 7016 Euclid Ave. Archts. est. $200,000.

O., Columbus—Hospital—Bd. Trustees Children's Hospital, 4 story, 147½ x 154 ft., brick, concrete and terra cotta, Stone and 17th Sts., to D. W. McGrath & Sons, 255 East Broad St., $325,000.

O., Columbus—High Schools—Bd. Educ., High and Town Sts., general contract Washington Gladden High School, 3 story, 200 x 400 ft., along Scioto River, and Edward Orten High School, 2 story, 278 x 327 ft., Arcadia Ave., both brick, stone and concrete, to R. H. Evans & Co., Ferris Bldg., $849,430 and $663,900 respectively. Noted June 22.

O., East Cleveland (Cleveland, P. O.)—Commercial—Office and Apartment—Eucor Co., c/o F. Jones, 820 Guardian Bldg., Cleveland, 2 story, 200 x 200 ft., brick steel and concrete, Euclid and Superior Aves., here, to H. H. Walker Co., 16005 Hazel Rd., Cleveland. Archts. est. $250,000. Noted June 1.

O., Lodi—High and Grade School—Bd. Educ., 2 story, 75 x 143 ft., brick, steel and concrete, plain foundation, to Hearn Constr. Co., 4501 Euclid Ave., Cleveland. Archts. est. $150,000.

O., Martins Ferry—High School—Bd. Educ. general contract 2 story, 90 x 100 ft., brick and steel, to Parish Bros., 217 Wick Ave., Youngstown, $150,650; heating and ventilating, to W. J. School Co., Youngstown, $36,954. Noted Dec. 8.

O., Wickliffe—School—Bd. Educ., 2 story, brick, steel and concrete addition, to F. W. Mark Constr. Co., Leader-News Bldg., Cleveland, $95,900. Noted June 22.

O., Wooster—High School—Bd. Educ., 2 story, 62 x 168 ft., brick and steel addition, plain foundation, to Long & Bogner, Wooster. Noted June 22.

Mich., Ann Arbor—Laboratory, etc.—Bd. Regents of Michigan University, 4 story, 189 x 248 ft. laboratory and engineering shops, rein.-con., brick and steel, plain foundation, here, to H. G. Christman & Co., 315 Stevens Bldg., Detroit. $700,000. Noted April 13.

Mich., Detroit—Office—C. H. Crane, archt., 542 Griswold St., 10 story, rein.-con., brick and steel, plain foundation, Woodward Ave., to A. W. Kutsche, 535 Griswold St. $400,000. Noted April 20.

Mich., Detroit—Office—S. S. Kresge Co., Kresge Bldg., 6 story, 60 x 60 ft. rein.-con., brick and steel, plain foundation, Grand River Ave., to Martin & Krausman Co., 1101 Vinton Bldg. $175,000. Noted April 20.

Wis., Manitowoc—High School—School Bd. brick, concrete and tile, plain foundation, to T. Stark & Co., 130 Muskego Ave., Milwaukee, $410,700. Tower and additional terrazzo work added to original bid. Noted June 22.

Ia., Davenport—Library—Bd. Library Trustees, altering and building addition, brick and tile, to J. Soller & Son, 337 Masonic Temple Bldg., $145,417. Noted May 25.

Ia., Des Moines—Office—Liberty Building Co., 12 story, steel, rein.-con., brick and Bedford stone, 6th and Grand Aves., to J. A. Benson Constr. Co., 422 Valley Natl. Bank Bldg., $1,000,000.

Minn., Minneapolis—Church and School—First Baptist Church, c/o W. B. Riley, 10th St. and Harmon Pl., 3 story, 112 x 147 ft. rein.-con., brick, stone and tile, 11th St. and Harmon Pl., to J. and W. A. Elliott Co., 509 Lumber Exchange Bldg., $180,000. Noted April 6.

Minn., Minneapolis—Library—State Bd. of Control, St. Paul, 6 story, 400 x 400 ft., rein.-con., brick and tile, State University Campus, here, to C. Skooglum, 502 Ryan Bldg., St. Paul, $926,856. Noted June 15.

Wash., Seattle—Church—Fourth Church of Christ Scientists, completing 5 story, 120 x 120 ft. concrete, steel and terra cotta, 8th and Seneca Sts., to N. McDonald, 339 Henry Bldg. Archts. est. $150,000.

Cal., San Francisco—Market—W. Houghtaling, constructing 1 story, brick and concrete, 8th and Market Sts., to G. Wagner, 251 Kearny St. $300,000. Cost plus percentage basis. Noted May 18.

Ont., Hamilton—Store, etc.—L. R. Steele & Co., Ltd., Royal Bank Bldg., converting 3 story building into store and cafeteria, concrete, brick and steel, general contract to W. H. Cooper, Clyde Bldg., $120,000, electrical work, to Salibury Electrical Co., 112 King St. W., Toronto. Total est. $150,000.

Ont., Preston—Sanitarium—Watt & Blackwell, archts., Bank of Toronto Bldg., London, 2 story, 40 x 370 ft. concrete, tile and stucco, to C. Braun, 295 King St. W., Kitchener, for Preston Sanitarium Co. Archts. est. $225,000. Noted June 8.

Federal Government Works

PROPOSED WORK

Cal., Livermore—Hospital—U. S. Veterans' Bureau, Room 1044, Arlington Bldg., Wash., D. C., having plans prepared by M. O'Brien, archt., 68 Post St., San Francisco, 30 rein.-con. and frame hospital buildings, on Cresta Blanca, 5 mi. from here. Noted June 8.

BIDS DESIDED

Mass., Lowell—Alterations—July 14 by Treas. Dept., Wash., D. C., alterations to U. S. Post Office, here. J. A. Wetmore, acting superv. archt.

Mass., Northampton—Foundations—July 3, at Office Director U. S. Veterans Bureau, Room 1044 Arlington Bldg., Wash., D. C., concrete foundations for 9 patient buildings, here; adv. this issue.

N. Y., Oswego—Cornice, etc.—July 19, Treas. Dept., Wash., D. C., restoring cornice, replacing roof construction, etc., on U. S. Post Office, here. J. A. Wetmore, acting superv. archt.; adv. this issue.

Ala., Tuskegee—Fire Alarm System—July 18 by Treas. Dept., Wash., D. C., for fire alarm system at U. S. Veterans Hospital, here. J. A. Wetmore, acting superv. archt.

Wis., Sheboygan—Mailing Shed—July 20, by Treas. Dept., Wash., D. C., new mailing shed at U. S. Post Office, here. J. A. Wetmore, acting superv. archt.; adv. this issue.

Minn., Albert Lea—Extension to Workroom, etc.—July 12 by Treas. Dept., Wash., D. C., for extension to workroom, new mailing vestibule, changes in Post Office screen, wire mesh partitions, etc. J. A. Wetmore, acting superv. archt.

Cal., Presidio (San Francisco P. O.)—Pump House, etc.—J. W. Roberts, Post Office Bldg., San Francisco, receiving bids for pump house, pump equipment and fire protection system, at Marine Hospital, here, for Treas. Dept., Wash., D. C.

Cal., San Francisco—Equipment—July 5, at U. S. Engineer Office, 240 Montgomery St., 2 sets evaporator equipment for dredges Sacramento and San Joaquin, to supply feed water for boilers and portable water for domestic use.

BIDS RECEIVED

Mass., Nantucket—Radio Compass House—Spec. 4638—Bureau Yards & Docks, Navy Dept., Wash., D. C., radio compass house, Naval Radio Station at Surfside, here, from W. F. Martens, 112 Cutler Bldg., Rochester, N. Y., $4,480; H. L. Gibbs, 5 Milk St., $5,500 (40 days); G. E. Ward, 417 East 24th St., New York, $5,176 (60 days). Noted June 22.

Pa., Phila.—Dredging—U. S. Engineer, 815 Witherspoon Bldg., 1321 Walnut St., dredging in Delaware River at Ft. Mifflin, 48,400 cu.yd. scow measurement, exclusive of allowable overdepth, and 6,200 cu.yd., maximum allowable overdepth, from Amer. Dredging Co., 510 Mariner & Merchant Bldg., $0.34 per cu.yd.; Delaware Dredging Co., 316 Insurance Exch. Bldg., $0.274. Noted June 15.

Va., Yorktown—Alternators, etc.—Spec. 4612—Bureau Yards & Docks, Navy Dept., Wash., D. C., alternators and auxiliary equipment at Navy Mine Depot, here, (1) work complete, from Westinghouse Electric Mfg. Co., 803 Hibbs Bldg., Wash., D. C., $9,500 (150 days); Electro-Mechanical Co.,

Federal Government (Continued)

South Calvert St., Baltimore, Md., $10,147, (2) $9,230; Carroll Electric Co., 714 12th St., Wash., D. C., $11,250 (150 days). Noted June 8.

Va., Yorktown—Remodeling, etc.—Spec. 4627—Bureau Yards & Docks, Navy Dept., Wash., D. C., remodeling and installing Diesel oil engines, here, (1) work complete from Amer. Eng. Co., Aramingo and Cumberland Sts., Phila., Pa., (1) $10,750 (150 days); Newport News Iron Wks., Newport News, (1) $11,200 (150 days), (2) $1,300; Shevlin Eng. Co., 110 West 34th St., New York, (1) $12,560 (150 days), (2) $1,305.

North Carolina—Repairs, etc.—Spec. 4661—Bureau Yards & Docks, Navy Dept., Wash., D. C., repairs and improvements to Naval Radio Compass Stations, at Poyners Hill, Cape Lookout and Cape Hatteras, also at Hog Island, Va., (1) work complete, from H. M. Lucas, 115 Maple St., Portsmouth, Va., (1) $5,787 (60 days) (2) $2,405 (3) $844 (4) $1,788 (5) $750; L. H. Harlan, 203 East Main St. Charlottesville, Va., (1) $14,642 (60 days) (2) $5,436 (3) $2,450 (4) $4,898 (5) $1,858.

Mont., Great Falls—Canals, etc.—U. S. Recl. Serv., Sun River Project, 118,000 cu. yd. canal excav., 21,000 cu.yd. excav. for structures, 1,850 cu.yd. rein.-con., 2,500 lin. ft. vitr. and concrete pipe, etc., from F. Coolidge, Laramie, Wyo., $66,539. Noted April 27.

CONTRACTS AWARDED

Mass., Hingman—Repairing Roof—Spec. 4680—Bureau Yards & Docks, Navy Dept., Wash., D. C., repairing roofs here, to Johns-Mansville, Inc., 55 High St., Boston, $55,484.

N. Y., Brooklyn—Repaving—Spec. 4675—Bureau Yards & Docks, Navy Dept., Wash., D. C., furnishing labor to repave Pier D, here, to Tide Water Roofing Co., Inc., 40 Sullivan St., New York, $3,842 (30 days). Noted June 15.

N. Y., New York—Steel Docks, etc.—Spec. 4677—Bureau Yards & Docks, Navy Dept., Wash., D. C., steel docks and closing panel Building 29, here, to C. Meads & Co., 217 West 14th St., $5,616. (60 days).

Pa., Phila.—Operating Device—Spec. 4674—Bureau Yards & Docks, Navy Dept., Wash., D. C., motor driven sash operating devices at Navy Yard, here, to David Lupton Sons Co., Inc., Allegheny and Tulip Sts., $6,422 (45 days). Noted June 15.

Pa., Phila.—Steam Line, etc.—Spec. 4668—Bureau Yards & Docks, Navy Dept., Wash., D. C., steam piping and concrete trench, Navy Yards, here, to N. Connelly, 1404 North 18th St., $39,030 (120 days). Noted June 15.

Pa., Phila.—Underpinning Storehouse—Spec. 4628—Bureau Yards & Docks, Navy Dept., Wash., D. C., underpinning aircraft storehouse, Naval Aircraft Factory, League Island, here, to Triest Contg. Corp., 126 East 59th St., New York, $227,270. (270 days). Noted June 1.

Md., Annapolis—Seawall—Spec. 4621—Bureau Yards & Docks, Navy Dept., Wash., D. C., seawall at Naval Academy, here, to McLean Contg. Co., Fidelity Bldg., Baltimore, $14,350 (120 days). Noted June 22.

D. C., Wash.—Fuel Oil Tanks—Spec. 4640—Bureau Yards & Docks, Navy Dept., Wash., D. C., oil tanks and piping at Balboa and Cristobal, tanks, pumps etc. at Coco Solo, to W. B. Kyle, 648 Call Bldg., San Francisco, Cal., $129,000 (160 days). Noted June 8.

D. C., Wash.—Repairs—Spec. 4623—Bureau Yards & Docks, Navy Dept., repairs to Marine Barracks, at Navy Yard, here, to G. E. Wright, Inc., 1454 Monadnock Bldg., Chicago, $22,700 (120 days). Noted June 8.

Va., Norfolk—Steam Main—Spec. 4617—Bureau Yards & Docks, Navy Dept., Wash., D. C., high pressure steam main, Navy Yard, here, to J. W. Danforth, 72 Ellicott St., Buffalo, N. Y., $26,948 (120 days). Noted June 8.

Va., Quantico—Remodeling—Spec. 4643—Bureau Yards & Docks, Navy Dept., Wash., D. C., remodeling hotel at Marine Barracks, here, to Claiborne & Taylor, Inc., Richmond Trust Bldg., Richmond, $12,500 (60 days). Noted June 8.

S. C., North Island—Radio Compass Station—Spec. 4658—Bureau Yards & Docks, Navy Dept., Wash., D. C., radio compass station at lighthouse reservation, here, to Simmons-Mayrant Co., Peoples Bldg., Charleston, $4,247 (40 days).

Fla., Pensacola—Bulkhead, etc.—Spec. 4644—Bureau Yards & Docks, Navy Dept., Wash., D. C., bulkhead, runway and beach at Naval Air Station, here, to Doulut & Williams Co., 816 Howard Ave., New Orleans, La., $97,900 (240 days). Noted June 22.

Cal., Mare Island—Power House Extension—Spec. 4664—Bureau Yards & Docks, Navy Dept., Wash., D. C., extension to power house here, to J. Pringle, 621 Georgia St., Vallejo, $8,800 (120 days). Noted June 15.

Miscellaneous

PROPOSED WORK

Retaining Wall and Fill—Springfield, Mass.—New York, New Haven & Hartford R.R., South Sta., Boston, plans rein.-con. retaining wall and solid fill, near and along the new Connecticut River Bridge. H. L. Ripley, c/o owner, engr.

Transmission Line, etc.—Newstead, N. Y.—Genesee Light & Power Co., Batavia, plans extension of service into Newstead, street lighting in Pembroke, and general improvement to sub-station at Attica. $53,700. Engineer not announced.

Tractor—Salamanca, N. Y.—City plans to purchase large tractor. To exceed $1,000.

Retaining Walls—Pittsburgh, Pa.—City, c/o C. H. Finley, dir. Pub. Wks., plans 300 ft. concrete retaining wall in 2 sections. $26,000.

Transmission Line—Nashville, N. C.—Plans 9 mi. transmission line from Rocky Mount to here. Mees & Mees, Charlotte, engrs.

Park and Playground, etc.—Dover, O.—Plans $30,000 bond issue for park and playground, to include dancing pavilion, boat house, bath house and 3,000 seat baseball grounds, etc.

Hydro-Electric Development—Ely, Minn.—Minnesota Utilities Co., Eveleth, plans hydro-electric development, 12,000 h.p., 5 miles east of here. Work includes electrical transmission system, concrete and steel dam, large power house on shores of Falls Lake, etc. $1,750,000. R. M. Hesketh, Eveleth, secy. and mgr.

Gas Line—Mill Valley, Cal.—Pacific Gas & Electric Co., 445 Sutter St., San Francisco, had surveys made constructing high pressure gas transmission line from here to Sausalito. $192,000. Private plans.

Electric Light and Distribution System—St. John, N. B.—Plans electric light and distribution system, cost between $850,000 and $900,000. H. Phillips, c/o New Brunswick Contg. Co., St. John, engr. in charge.

BIDS DESIRED

Turbines, etc.—Cohoes, N. Y.—July 10, by C. L. Cadle, supt. Pub. Wks., Albany, furnishing and delivering 2 hydraulic turbines with governor equipment and extra parts also 2 water wheel driven generators and other electrical equipment in proposed power house at Crescent Dam, here, Contrs. A-1 and A-2; adv. this issue.

Park—Elmira, N. Y.—Cashmere Grotto No. 11, M.O.V.P.E.R., Masonic Temple, taking bids constructing new Park first unit to include 125 x 170 ft. wood and steel building. $40,000. H. M. Haskell, Hett Bldg., Elmira, archt. Noted June 8.

Concrete Mixer—Jamestown, N. Y.—Bd. Estimate & Review taking bids large concrete mixer, $5,800. L. Bergman, city engr.

Bituminous Road Surfacing Material—New York, N. Y.—July 6, by W. J. Flynn, acting pres. Bronx Boro, furnishing and delivering 35,000 gal. bituminous road surfacing material (for hot use).

Timber, etc.—Peeksville, N. Y.—July 7, by State Bd. Armory Comrs., 158 State St., Albany, furnishing timber, sheathing, flooring, exterior facing lumber, etc., for stable, State Camp of Instruction, near here. F. W. Ward, secy.; adv. this issue.

Ornamental Lights—Long Branch, N. J.—July 5, installing ornamental lights on Liberty St., Union, 2nd and rockwell Aves. from Bway. to Union Ave. F. C. Quinn, city clk.; adv. this issue.

Cranes—Pittsburgh, Pa.—Jones & Laughlin Steel Co., Ross and 3rd Aves., taking bids 77 cranes for plant at Hammond, Ind.

Cranes—Pittsburgh, Pa.—Natl. Tube Co., Frick Bldg., taking bids 128 cranes for new mill at Gary, Ind.

Engine-Generator Unit—Belhaven, N. C.—July 19 for 150 k.w. diesel or semi-diesel crude oil engine-generator unit, with appurtenances. W. C. Olsen, Kinston, consult. engr.

Oil Engine, Generator, etc.—Sarasota, Fla.—July 5, by Bd. Pub. Wks., one 300-320 h.p. oil engine, one 240-250 kva. generator, 1 exciter, belt driven, 1 switchboard panel, etc., alternate on 200 h.p. engine, electric generator, switchboard, etc. J. Gill, clk.

Cement, Vitrified Brick or Asphalt Block—Tallahassee, Fla.—Receiving bids for furnishing cement, vitr. brick or asphalt block for paving 2 mi. $40,000. J. W. Greer, Tallahassee, engr.

Hydro-Electric Development—Dotham, Ala.—Aug. 15, by E. O. Jones, mayor and City Council, constructing hydro-electric project. Ludlow Engrs. Inc., Winston-Salem, engrs.; adv. this issue.

Steam and Water Piping—Starkville, Miss.—July 8, by State Bond Impvt. Comn., Jackson, furnishing and installing complete system of steam and water piping in power house at A. & M. College, here. Link & Trueblood, 1520 Chemical Bldg., St. Louis, Mo., archts. C. Link, Jackson, supervising archt.

Dump Truck, etc.—Akron, O.—July 3, by B. J. Hill, city purch. agt., one 5 ton dump truck and 1 car of pig lead.

Subway—Michigan—July 6, by State Hy. Dept., Lansing, subway under Michigan Central tracks and grading 0.396 road, incl. 1,406 cu.yd. rein.-con., 20,600 lb. reinforcing steel, 15,442 cu.yd. excav., etc., Jackson Co.

Electric Traveling Crane—Milwaukee, Wis.—July 7, by J. H. Fowles, secy. Sewerage Comn., 508 Market St., 20 ton electric traveling crane.

Wharf—Grosse Ile, Que.—July 6, by Dept. Pub. Wks., Ottawa, addition to eastern wharf at Grosse Ile Quarantine Sta. $26,000. K. M. Cameron, c/o Dept. Pub. Wks., Ottawa, engr.

Conduits—Montreal, Que.—Electrical Comn. receiving bids for placing conduits in streets west of Bleury St. to line of Beaver Hall Hill and east of St. Lawrence St. to Berri St. $250,000.

Barge—Quebec, Que.—July 5, by Dept. Marine & Fisheries, Ottawa, one steel single screw Hopper Barge, 210 ft. long, 35 ft. wide, 950 cu.yd. capacity, 1,250 hp.

Cinder Carrying System—London, Ont.—Taking bids system for carrying cinders from incinerator across river about 1,000 ft. H. A. Brazier, city engr.

BIDS RECEIVED

Foundation—Detroit, Mich.—Art Comn., 704 East Jefferson Ave., opened bids for foundation, incl. grading, excav., underground drainage, and water system for art institution, from A. J. McLean Co., 300 Holden Bldg., $103,852; Thompson-Starret Co., 333 State St., $105,000; A. W. Kutche Co., 535 Griswold St., $109,874.

Tunnel—San Francisco, Cal.—Bd. Pub. Wks., constructing Pulgas Tunnel, Hetch Hetchy Project, Contr. 85, from Grant-Smith Co., Balboa Bldg., $683,050; Utah Constr. Co., Phelan Bldg., $710,582; F. Rolandi, 550 Montgomery St., $744,850. Noted June 15.

CONTRACTS AWARDED

Inorganic Dust, etc.—New York, N. Y.—J. Miller, pres. Manhattan Boro, Municipal Bldg., furnishing and delivering 3,000 ton inorganic dust, to New York Trap Rock Co., 101 Park Ave., $22,050; 1,000 cu.yd. paving grits, to Rosoff Sand & Gravel Co., 152 West 42nd St., $1,800; 500,000 gal. refined asphalt, to Standard Oil Co. of New York, 26 Bway., $26,500. Noted June 15.

Subway—Erie, Pa.—City and Pennsylvania R.R., grading, draining and constructing city's portion of retaining walls, in connection with Cherry St. subway, to W. Bancroft, Jr., Erie. Engrs. est. $105,000. Noted June 8.

Power Lighting and Signal System—Norfolk, Va.—For power, lighting and signal system for grain elevator at Sewalls Point, to Electro Mechanical Co., 432 North Calvert St., Baltimore, Md. $60,000.

Mechanical Equipment—Goldsboro, N. C.—See "Waterworks."

Electric Distribution and Lighting System—Ada, Minn.—For electric distribution and lighting system, to E. W. Johnson, Ada, about $20,000. Engrs. est. $25,000. Noted June 1.

Transmission Line—Andale, Kan.—For 20 mi. transmission line from here to Wichita through Colwich to Maize, to D. Chapin, Jr., 1806 East 29th St., Kansas City, Mo., $33,006. Noted June 15.

Transmission Line and Distribution System—Lawrence, Neb.—City, constructing transmission line and distribution system to Hackett & Cooper, Bankers Life Bldg., Lincoln, $13,310. Noted June 15.

Electric Distribution System—Hillsboro, N. D.—Electric distribution and lighting system, to M. Hyland, 1114 8th Ave., N. Fargo, $21,000. Noted May 25.

Gas Line—San Antonio, Tex.—Grubstake Investment Co. 90 mi. pipeline from here to gas field in McMullen Co., to Hope Eng. Co., Mt. Vernon, O.

Swimming Baths—Ottawa, Ont.—City Council rescinded contracts for swimming baths on King Edward Ave. and Plouffe Park. Project postponed until 1923. Noted June 15.

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Copy: Official Proposals reaching our New York Office by 10 A. M., Tuesday can usually be printed in the issue out Thursday.

Rate:
40 Cents a Line an Insertion

Plans and Specifications for inspection by distant bidders may be filed at any of the Engineering News-Record offices without charge.

THESE ADVERTISEMENTS ARE OFFICIAL NOTICES THAT BIDS ARE WANTED FROM BIDDERS EVERYWHERE.

OFFICIAL PROPOSALS

Bids: July 25.

Piggery and Incinerating Plant

Buffalo, N. Y.

Sealed proposals will be received at the office of this department, Room 3, Municipal Building, until 11:00 o'clock July 25, 1922, for the following:

1st. For a tract of land not less than 200 nor more than 600 acres in area, adjoining a railroad and within fifteen miles of the Buffalo City Line, for the operation and maintenance of a piggery. Bidders must give a full description of the property, price per acre or terms for a lease for a period of years, subject to purchase by the city, and give to the city the right to purchase the same at the price mentioned in said bid, for a period of six months from the date of the opening of such bid.

2nd. For a tract of land not less than 10 acres, adjoining a railroad and not over fifteen miles from the Buffalo City Line, for the operation and maintenance of an incineration or reduction plant. Bidders must give a full description of the property, price per acre or terms for a lease for a period of years subject to purchase by the city, and give to the city the right to purchase the same, at the price mentioned in said bid, for a period of six months from the date of the opening of such bid.

3rd. For the necessary machinery and equipment for the incineration or reduction of all garbage collected by the City of Buffalo, which machinery and equipment must have a capacity of 200 tons per day. Bidders must submit detailed plans and specifications showing their method of incineration or reduction, including the cost of operation per ton, the commercial value of the residue, the names of cities where similar plants are being operated and a guaranty that no obnoxious gases or odors will be created through operation. No proposal will be considered unless it be accompanied by a certified check, payable to the order of the Department of Public Works, in an amount equal to ten per cent of the cost of said machinery and equipment, or a bond in conformity with law, which bond shall be fifty per cent of the sum named in the proposal.

4th. For the necessary machinery and equipment for the incineration or reduction of some of the garbage of the City of Buffalo, which said machinery and equipment must have a capacity of at least 50 tons per day. Bidders must submit detailed plans and specifications showing their method of incineration or reduction, including the cost of operation per ton, the commercial value of the residue, the names of cities where similar plants are being operated and a guaranty that no obnoxious gases or odors will be created through operation. No proposal will be considered unless it be accompanied by a certified check, payable to the order of the Department of Public Works, in an amount equal to ten per cent of the cost of said machinery and equipment, or a bond in conformity with law, which bond shall be fifty per cent of the sum named in the proposal.

Any desired information in regard to the above can be had on application at the office of the Commissioner of Public Works, Room 3, Municipal Building, on and after this date.

This department reserves the right to reject any and all bids and waive any informalities.

The above bids are requested pursuant to action of the Council of the City of Buffalo taken on the 24th day of May, 1922, by resolution No. 27 of said date.

ARTHUR W. KREINHEDER,
Commissioner of Public Works.
June 19, 20, 26, 27. City of Buffalo.

OFFICIAL PROPOSALS

Bids: July 5.

Five Sections of State Highway

Baltimore, Md.

Sealed proposals for building five sections of State Highway, as follows:

CARROLL COUNTY—Contract CL-39—One section of State Highway from Eldersburg to Freedom, a distance of 2.0 miles—(Concrete).

FREDERICK COUNTY—Contract F-55—One section of State Highway through Emmitsburg, a distance of 0.53 miles—(Concrete).

HOWARD COUNTY—Contract HO-22—One section of State Highway through Ellicott City, a distance of 0.4 miles—(Concrete).

BALTIMORE COUNTY—Contract B-52—One section of State Highway from Jacksonsville to Sweet Air, a distance of 1.34 miles—(Concrete).

ST. MARYS AND CHARLES COUNTIES—Contract SM-17 and CH-24—One section of State Highway from New Market toward Dentsville, a distance of 4.0 miles—(Gravel).

will be received by the State Roads Commission at its offices, 601 Garrett Building, Baltimore, Maryland, until 12 m., Standard Time, on the 5th day of July, 1922, at which time and place they will be publicly opened and read.

Bids must be made upon the blank proposal form which, with specifications and plans, will be furnished by the Commission upon application and cash payment of $1.00, as hereafter no charges will be permitted.

No bids will be received unless accompanied by a certified check for the sum of five hundred ($500) dollars, payable to the State Roads Commission.

The successful bidder will be required to give bond, and comply with the Acts of the General Assembly of Maryland, respecting contracts.

The Commission reserves the right to reject any and all bids.

By order of the State Roads Commission this 15th day of June, 1922.

J. N. MACKALL, Chairman.
L. H. STANART, Secretary.

Bids: July 11.

Sluice-gates, Hydraulic Cylinders etc.

CONTRACT 208

New York City.

Sealed bids will be received by the Board of Water Supply, at its offices, twenty-second floor, Municipal Building, Park Row, Centre and Chambers Streets, New York City, until 11 a.m., Eastern Standard time, on Tuesday, July 11, 1922, for Contract 208, for furnishing and delivering sluice-gates, hydraulic cylinders, fittings and appurtenances for the intake shaft of the Shandaken tunnel, all as set forth in the specifications. All deliveries shall be made f.o.b. at the Grand Gorge station on the Ulster and Delaware railroad, Delaware County, New York.

At the above place and time the bids will be publicly opened and read. Pamphlets containing information for bidders, forms of bid and contract, specifications contract drawings, etc., can be obtained at the office of the Secretary at the above address, by depositing the sum of ten dollars ($10) in cash or its equivalent for each pamphlet. For further particulars apply to the office of the Chief Engineer at the above address.

GEORGE J. GILLESPIE.
President.
JAMES P. SINNOTT.
PHILIP F. DONOHUE.
Commissioners, Board of Water Supply.
BENJ. F. EINBIGLER, Secretary.

OFFICIAL PROPOSALS

Bids: July 7.

Highway Work Route 4—Section 17

Toms River, N. J.

NOTICE IS HEREBY GIVEN that sealed bids will be received by the County of Ocean for the following: Construction of State Highway, Route 4, Section 17, Main Street, Barnegat.

Estimate of reinforced cement concrete pavement is 12,921 sq.yd.

Work is to be performed under County Reimbursement Act, Chapter 183, Laws of 1918, and amended by Chapter 317, Laws of 1920.

Bids will be received at the Court House, at Toms River, N. J., on July 7th, 1922, at 11 a.m., Standard Time.

Drawings, specifications and form of contract and bond for the proposed work are on file in the office of J. M. Abbott, County Engineer, at Toms River, and in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders. Plans will be furnished on deposit of ten ($10.00) dollars upon application to J. M. Abbott, County Engineer. Bids must be made on the standard proposal forms in the manner designated therein and as required by the specifications, enclosed in sealed envelopes, addressed to the Board of Chosen Freeholders of the County of Ocean and bearing the name and address of the bidder and the name and section of the route on the outside. Bid must be accompanied by a certified check drawn to the order of T. B. Crammer, County Treasurer, for not less than ten (10%) per cent of amount of the bid, provided that said certified check shall not be less than $500.00 nor more than $20,000.00, and be delivered at the above place on or before the hour named. Copies of the standard proposal form will be furnished on application to J. M. Abbott, County Engineer.

Each bidder must accompany his bid with a certificate from a surety company duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in and in accordance with the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications. Each bidder must also accompany his bid with a statement of equipment properly filled out.

By order of a resolution of the Board of Chosen Freeholders of the County of Ocean passed at a meeting held on June 8th, 1922.

D. O. PARKER, Clerk.

Bids: July 7.

Sewage Treatment Plant

Geneva, Ohio.

Sealed bids for the construction of a Sewage Treatment Plant will be received by the Village Clerk to 12 o'clock noon, on July 7, 1922.

Plans and specifications may be seen at the office of the Clerk or may be obtained from Burgess and Niple, Engineers, 223 East Broad St., Columbus, Ohio, on deposit of ten dollars, of which five dollars will be refunded on return of plans and specifications within ten days after letting. A bond or certified check in the sum of ten per cent of the amount of the bid shall accompany the proposal. The Village reserves the right to reject any and all bids, and to waive informalities.

The Village of Geneva, Ohio.
W. E. MORGAN, Clerk.

OFFICIAL PROPOSALS

Bids: July 11.

State Road Work

Charleston, W. Va.

Sealed proposals will be received by the State Road Commission of West Virginia at its office in Charleston, West Virginia, until 10 o'clock A.M. on the 11th day of July, 1922, and at that time and place publicly opened and read, for the repair of bridge and the construction of sections of state road, also for cleaning, furnishing and applying Tar Cold Surface Application on Sections of State Roads, cover coat chips to be furnished and applied by State.

PROJECTS

3066—Cabell County—Repair of Salt Rock Bridge No. 707.

3063—Wyoming County—Mullins-Elmore Road 4.8 miles grading, drainage structures and paving 718 feet with brick, balance with concrete or concrete base with Bituminous concrete, Warrenite or Rock Asphalt surface as alternates.

3156—Nicholas County—Main Street Summersville 0.5 mile grading, drainage structures and paving with Bituminous Macadam.

3019—Preston County—Kingwood-Terra Alta Road, 10 miles grading, drainage structures and paving with Bituminous Macadam.

3135-B—Kanawha County—Hughes Creek to Lock 2, 2.75 miles for grading and drainage structures.

34 and 60—Monroe County—4.3 miles cleaning and Tar Cold Surface application.

94 and 2006—Fayette County—14.1 miles cleaning and Tar Cold Surface application.

1 and 2003—Greenbrier County—7.9 miles cleaning and Tar Cold Surface application.

2039, 2040, 2042, 2043, 2044—Mercer County—22.1 miles cleaning and Tar Cold Surface Application.

72—Hampshire County—3.3 miles cleaning and Tar Cold Surface application.

62—Hardy County—7.5 miles cleaning and Tar Cold Surface application.

64—Jefferson County—3 miles cleaning and Tar Cold Surface application.

67—Berkeley County—7.3 miles cleaning and Tar Cold Surface application.

1131—Berkeley County—1 mile cleaning and Tar Cold Surface application.

2093—Mineral County—2 miles cleaning and Tar Cold Surface application.

(Note: Projects 72, 62, 64, 67, 1131 and 2093 will be covered by one contract.)

Proposals will be received only upon State Standard Forms in accordance with plans, specifications and estimates of quantities therefor, which standard forms, plans, specifications and estimates may be obtained from the Office of the State Road Commission at Charleston, West Virginia, or at the office of the Division Engineer in whose territory the construction work is to be done.

Each proposal must be accompanied by a certified check in the amount equal to 5 per cent of the total amount of the proposal and not less than $500.00.

The right is reserved to reject any and all proposals.

STATE ROAD COMMISSION
E. B. CARSKADON, Secretary.

Bids: July 21.

Rebuilding Bridge Floor

Portland and South Portland, Maine.

Sealed proposals for rebuilding the floor of the fixed spans of Vaughans Bridge with wood block paving will be received at the office of the Commissioner of Public Works, City Hall, Portland, Maine, until Friday the twenty-first day of July, 1922, at 12 o'clock M., when they will be publicly opened and read.

Each bid must be accompanied by a certified check for $3,000. Said check must be made payable to the order of the Treasurer of the Portland Bridge District and must not be enclosed with the proposal. A bond of some responsible surety company satisfactory to the Bridge Commissioners will be required of the successful bidder to ensure the faithful performance of the conditions of the contract. Blanks on which proposals must be made, specifications, and further information may be obtained at the office of the said Commissioner.

Bids should be marked "Proposal for rebuilding the floor of Vaughans Bridge" and addressed to Edward M. Hunt, One of the Bridge Commissioners, Department of Public Works, City Hall, Portland, Maine.

The Bridge Commissioners reserve the right to reject any or all bids should they deem it for the best interest of the Portland Bridge District so to do.

OFFICIAL PROPOSALS

Bids: July 14.

Highway Route No. 16 Section No. 2

Somerville, N. J.

Notice is hereby given that sealed bids will be received by the County of Somerset for the following: The construction of State Highway Route No. 16, Section No. 2, from Mine Mount Road to Bedminster Corner, consisting of 38,419 square yards of "Surface Type C One Course Reinforced Cement Concrete Pavement," with drains and appurtenances.

Work is to be performed under County Reimbursement Act, Chapter 183, Laws of 1918 and amended by Chapter 317, Laws of 1920.

Bids will be received at the Court House at Somerville on Friday, July 14, 1922, at 11 A.M., Daylight Saving time (10 A.M., Eastern Standard time).

Drawings, specifications and form of contract and bond for the proposed work are on file in the office of H. C. Van Emburgh, County Engineer, at Somerville Court House and in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders. Plans will be furnished on deposit of Ten Dollars ($10.00) upon application to H. C. Van Emburgh, County Engineer. Bids must be made on the standard proposal forms in the manner designated therein as required by the specifications, enclosed in sealed envelopes, addressed to the Board of Chosen Freeholders of the County of Somerset and bearing the name and address of the bidder and the name and section of the route on the outside. Bid must be accompanied by a certified check drawn to the order of Edwin Garretson, County Treasurer, for not less than ten per cent (10%) of amount of the bid, provided that said certified check shall not be less than Five Hundred Dollars ($500.00) nor more than Twenty Thousand Dollars ($20,000.00), and be delivered at the above place on or before the hour named. Copies of the standard proposal form will be furnished on application to H. C. Van Emburgh, County Engineer.

Each Bidder must accompany his bid with a certificate from a surety company duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in and in accordance with the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and the specifications. Each bidder must also accompany his bid with a statement of equipment properly filled out.

By order of a resolution of the Board of Chosen Freeholders of the County of Somerset passed at a meeting held on Tuesday, June 13, 1922.

WM. S. WOODRUFF, Clerk.

Bids: July 11.

Street Paving

Newton, N. J.

Notice is hereby given that sealed bids will be received by the Town of Newton for the paving of High Street in the Town of Newton, Sussex County, with a reinforced concrete pavement. Estimated amount of surface pavement required is 8,355 square yards and opened and read in public at the Freeholders office, Newton, N. J., on July 11, 1922, at 10:30 a.m., Standard Time.

"Drawings, specifications and forms of bid, contract and bond for the proposed work prepared by W. J. Hardin, Town Engineer, and approved by the State Highway Commission have been filed in the office of the said Engineer at Newton, N. J., and of the said State Highway Commission, Trenton, N. J., and may be inspected by prospective bidders during business hours. Bidders will be furnished with a copy of the specification and blue prints of the drawings by the Engineer on proper notice and payment of the cost of preparation. Bids must be made on the Standard proposal form in the manner designated therein and required by the specifications. Must be enclosed in sealed envelopes, bearing the name and address of the bidder and name of the road on the outside. Addressed to the Town of Newton, Newton, N. J., and must be accompanied by a Surety Company Certificate and a certified check for not less than ten (10) per cent of the amount bid, provided said check shall not be less than $500.00 nor more than $20,000.00 and be delivered at the place and on the hour above named. The Standard Proposal Form is attached to the specifications, copies of which will be furnished on application to Engineer.

"By order of the Town Committee of the Town of Newton."

(Signed) J. R. CORNELL, Clerk.

OFFICIAL PROPOSALS

Bids: July 5.

Bascule Lift Span

West Palm Beach, Fla.

Detailed plans, specifications and sealed proposals for furnishing all necessary materials, constructing and erecting complete ready for travel, a Bascule lift span with necessary approach spans to connect lift spans and present approaches across lock chamber on Lock No. 3 on Palm Beach Canal at the crossing of Dixie Highway at the South limit of the City of West Palm Beach will be received by the board of County Commissioners of Palm Beach County, Florida, at the Clerk's office at West Palm Beach, Fla., up to 10 a.m., Wednesday, July 5, 1922.

The lift span shall conform to the following requirements: The roadway shall be eighteen (18) feet between curbs; there shall be one sidewalk on East side five (5) feet wide. Sufficient rails will be provided for outer side of roadway and sidewalk. The Movable span will be designed to allow full clearance for full width of lock chamber at all points. Suitable connecting span on either side of movable span shall be provided to connect present approaches to movable span; of a kind and quality equal to that of the present approach spans. The bridge shall be located in such manner as will be required to maintain present line of roadway on West side; East side extending beyond present roadway line to such point as is necessary to conform to above mentioned dimensions. The structure shall be designed for a uniform load of 100 lb. per square foot for roadway and 80 lb. per square foot of the sidewalk. The floor system shall be designed for concentrated load of fifteen (15) ton roller loading. The movable span shall be constructed of steel and reinforced concrete with wood decking plank. The maximum stress in steel shall be 16,000 lb. per square inch; same for reinforced concrete; 1:2:4; proportion shall not exceed 600 lb. per square inch; shearing, bearing, and bending value of pins and rivets to conform to Florida State Highway Standard specifications.

All cast portions of machinery shall be made from steel castings. All pins and shafting shall be made from cold rolled steel shafting or machinery steel. All pinions and gears shall be cut gears with pitch line marked plainly on gears. Tenders are asked for proposals for either hand operated and for hand and electric operated movable span. End locks shall be provided. All steel work shall be painted one shop coat and two field coats of approved paint.

Successful bidder shall prepare all necessary plans, furnish, construct, erect in perfect adjustment all materials. Contractor shall provide suitable oiling devices, and shall operate movable span as may be required until the completed work is accepted by the County under contract.

The work shall be let for one lump sum contract, which shall include for one price, the furnishing of all materials, labor, equipment and means of construction and deliver the entire structure, completed and ready for traffic.

Bidders will be required to visit the site, and make all necessary measurement and design to avoid interference with lock operation. Bidders will familiarize themselves with local conditions. No allowance will be made for existing conditions not herein mentioned.

Successful bidder will be required to secure permit for this construction from the War Dept., U. S. A., and from the Board of Commissioners of Everglade Drainage District, without cost to the County.

The interpretation of plans and specifications as submitted by bidders shall be governed by the decision of the County Engineer, whose decision shall be final.

Each bid must be accompanied with certified check payable to the Chairman of the Board of County Commissioners in an amount equal to two (2%) per cent of the amount of bid, which shall be considered as a guarantee of good faith on the part of the bidder, and shall be forfeited in case of failure of bidder to enter into contract promptly on notification of award of contract to him or them.

The successful bidder shall be required to furnish a bond, satisfactory to the Board of County Commissioners in amount equal to twenty-five (25%) per cent of the amount of the contract price.

Bidder shall state when they will begin work and time required for completion of the same.

The Board reserves the right to reject any or all bids.

By order of the Board of County Commissioners.
HECTOR HARRIS,
Chairman.
FRED E. FENNO, Clerk.

OFFICIAL PROPOSALS

Bids: July 7.

Highway Work
Route 4—Section 18

Toms River, N. J.

NOTICE IS HEREBY GIVEN that sealed bids will be received by the County of Ocean for the following: Construction of State Highway, Route 4, Section 18, in the Borough of Tuckerton.

Estimated amount of cement concrete pavement is 17,600 sq.yd.

Work is to be performed under County Reinmbursement Act, Chapter 183, Laws of 1918, and amended by Chapter 317, Laws of 1920.

Bids will be received at the Court House, at Toms River, N. J., on July 7th, 1922, at 11 a.m., Standard Time.

Drawings, specifications and form of contract and bond for the proposed work are on file in the office of J. M. Abbott, County Engineer, at Toms River, and in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders. Plans will be furnished on deposit of ten ($10.00) dollars upon application to J. M. Abbott, County Engineer. Bids must be made on the standard proposal forms in the manner designated therein and as required by the specifications, enclosed in sealed envelopes, addressed to the Board of Chosen Freeholders of the County of Ocean and bearing the name and address of the bidder and the name and section of the route on the outside. Bid must be accompanied by a certified check drawn to the order of T. B. Crammer, County Treasurer, for not less than ten (10%) per cent of amount of the bid, provided that said certified check shall not be less than $500.00 nor more than $20,000.00, and be delivered at the above place on or before the hour named. Copies of the standard proposal form will be furnished on application to J. M. Abbott, County Engineer.

Each bidder must accompany his bid with a certificate from a surety company duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in and in accordance with the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications. Each bidder must also accompany his bid with a statement of equipment properly filled out.

By order of a resolution of the Board of Chosen Freeholders of the County of Ocean passed at a meeting held on June 8th, 1922.

D. O. PARKER, Clerk.

Bids: July 11.

County Road Work

Newton, N. J.

Notice is hereby given that sealed bids will be received by the County of Sussex for the following work.

No. 1. Paving Fredon Newton Road. Estimated amount of surface pavement 7,800 sq.yd. reinforced concrete.

No. 2. Paving Branchville Dingmans Road. Estimated amount of surface pavement 10,983 sq.yd. reinforced concrete.

And opened and read in public at Freeholders Office, Newton, N. J., on July 11th, 1922, at ten-thirty (10:30) a.m., Standard Time.

"Drawings, specifications and forms of bid, contract and bond for the proposed work, prepared by Harvey Snook, County Engineer, and approved by the State Highway Commission, have been filed in the office of the said Engineer at Newton, N. J., and of said State Highway Commission, Trenton, N. J., and may be inspected by prospective bidders during business hours. Bidders will be furnished with a copy of the specifications and blue prints of the drawings by the Engineer on proper notice and payment of cost of preparation. Bids must be made on the standard proposal forms in the manner designated therein and required by the specifications, must be enclosed in sealed envelopes, bearing the name and address of bidder and name of road on the outside, addressed to The County of Sussex and must be accompanied by a Surety Company Certificate and a certified check for not less than ten (10) per cent of the amount bid, provided said check shall not be less than $500.00 nor more than $20,000.00 and be delivered at the place and on the hour above named. The Standard proposal form is attached to the specifications, copies of which will be furnished on application to Engineer. The right is reserved to reject any or all bids.

"By order of the County of Sussex."

(Signed) WILLIAM S. VOUGHT, Clerk.

Bids: July 18.

Pier Sheds and Grain Conveyor Gallery

CONTRACT No. 10

Portland, Maine.

Sealed bids for the construction of the North and South Sheds and Grain Conveyor Gallery at and near the State Pier, Portland, Maine, will be received by the Directors of the Port of Portland and by the Grand Trunk Railway Company of Canada at the office of the Directors, 67 Commercial Street, Portland, Maine, until 1 p.m., Eastern Standard Time (2 p.m. Daylight Saving Time) on Tuesday, July 18, 1922, at which time and place the bids will be publicly opened and read aloud.

The pier sheds will have steel frames with wooden roofs and the North Shed will have a wooden floor on steel stringers. The Grain Conveyor Gallery will have steel frame and concrete floor. The siding of both sheds and the Grain Conveyor Gallery will be of asbestos protected metal.

Before the award of the contract any bidder may be required by the Directors to show that he has the necessary experience, ability, equipment and financial resources to perform the work within the time stipulated and in a manner satisfactory to the Engineer.

The bid must be accompanied by a properly certified check for the sum of twenty thousand ($20,000) dollars.

A bond in the sum of one hundred fifty thousand ($150,000) dollars of a surety company satisfactory to the Directors, will be required for the faithful performance of the contract.

A more complete description of the work to be done is given in the Notice to Bidders, the forms of Bid, Contract, Bond, the Specifications and the Contract Drawings.

Copies of the foregoing may be inspected at the office of the Directors of the Port of Portland, at Portland, and may be obtained from the Engineers, Fay, Spofford & Thorndike, Boston, Mass. The address of the Engineer up to and including June 30 is 15 Beacon Street, Boston 9, Mass., and on and after July 1, 200 Devonshire Street, Boston 9, Mass.

A charge of fifteen ($15) dollars will be made for a complete set of the Notice to Bidders, forms of Bid, Contract, Bond, the Specifications and the Contract Drawings.

Receipt of bids will be subject to the conditions stated in said Notice to Bidders.

The right is reserved to reject any or all bids.

HENRY F. MERRILL, President,
BERTRAND G. McINTIRE,
FRED W. BUNKER,
JAMES Q. GULNAC,
ALEXANDER T. LAUGHLIN,
Directors of the Port of Portland.
FAY, SPOFFORD & THORNDIKE,
Engineers.

June 17, 1922.

Bids: July 11.

Central Ferry Bridge

Olympia, Washington.

NOTICE IS HEREBY GIVEN that sealed bids will be received at the office of the Supervisor of Highways of the State of Washington at Olympia, Wash., until 10 o'clock a.m., July 11, 1922, and then publicly opened for the construction of a steel bridge with concrete substructure across the Snake River at Central Ferry, Washington. The bridge consists of one 263-ft. through truss, seven 169-ft. deck trusses and 185 linear feet of concrete approach. Approximate quantities are:

3,000 cu.yds. Foundation Excavation.
4,270 cu.yds. Concrete.
210,000 pounds Reinforcing Steel.
1,900,000 pounds Structural Steel.

Each bid must be accompanied by a certified check payable to the State Treasurer for five per cent of the amount of the bid. The right is reserved to reject any and all bids. If upon acceptance of the bid, the bidder fails and neglects within ten (10) days from date of notification of such acceptance to enter into a contract and furnish the necessary bond the certified check will be forfeited, cashed and the proceeds paid into the Public Highway Fund of the State Treasury. The check of all unsuccessful bidders will be returned after the contract is entered into and the bond given.

Plans and specifications may be obtained from the office of the Supervisor of Highways, Olympia, Washington.

JAMES ALLEN,
Supervisor of Highways,
Olympia, Washington.

Bids: July 14.

Highway Route No. 9
Section 9a

Belvidere, N. J.

Notice is hereby given that sealed bids will be received by the County of Warren for the following: Construction of State Highway Route No. 9, Section No. 9a Still Valley to Bloomsbury. Estimated amount of reinforced coment concrete pavement is 35,050 square yards.

Work is to be performed under County Reimbursement Act, Chapter 183, laws of 1918, and amended by Chapter 317, laws of 1920.

Bids will be received at the Court House at Belvidere, N. J., on

FRIDAY, JULY 14, 1922, AT 1 O'CLOCK P.M., STANDARD TIME.

Drawings, specifications and form of contract and bond for the proposed work are on file in the office of Harry W. Vetter, County Engineer, at Belvidere, N. J., and in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders. Plans will be furnished on deposit of ten dollars ($10.00) upon application to Harry W. Vetter, County Engineer. Bids must be made on the standard proposal forms in the manner designated therein and as required by the specifications, enclosed in sealed envelopes, addressed to the Board of Chosen Freeholders of the County of Warren and bearing the name and address of the bidder and the name and section of the route on the outside. Bid must be accompanied by a certified check drawn to the order of H. O. Carhart, County Treasurer, for not less than ten per cent (10%) of amount of the bid provided that said certified check shall not be less than $500.00 nor more than $20,000.00 and be delivered at the above place on or before the hour named. Copies of the standard proposal form will be furnished on application to Harry W. Vetter, County Engineer.

Each bidder must accompany his bid with a certificate from a surety company duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in and in accordance with the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications. Each bidder must also accompany his bid with a statement of equipment properly filled out.

By order of a resolution of the Board of Chosen Freeholders of the County of Warren passed at a meeting held on June 14, 1922.

MORRIS S. FAUST, Clerk.

Bids: July 8.

Bridge Construction

Salem, N. J.

Notice is hereby given that sealed bids will be received by the County of Salem for the construction of Bridge 57 M. P. O. O W on Route 6 State Highway System, over Fenwick Creek at Salem, N. J., to replace the old Covered Bridge, with two spans of 33 feet 8 inches each, wing walls, balustrades and asphalt block pavement.

The work includes erection and maintenance of a temporary bridge and the use of about 1,400 cubic yards of concrete. Engineer's estimate of cost about $60,000.00.

Bids will be received at the Court House, Salem, New Jersey, Saturday, July 8, 1922, at 10 a.m., Standard Time, and publicly opened and read immediately thereafter.

Plans, specifications and further information may be obtained from H. B. Keasbey, County Engineer, Salem, New Jersey, or the State Highway Department, Trenton, N. J.

Plans will be furnished on deposit of ten dollars ($10.00) upon application to Howard B. Keasbey, County Engineer, Salem, N. J.

ERVIN G. OCHS,
Clerk.

June 15, 1922.

Bids: July 17.

Agricultural Building

Urbana, Ill.

Sealed proposals for General Work on the New Agricultural Building to be erected for the University of Illinois, at Urbana, will be received at the office of James M. White, Supervising Architect, 256 Administration Building, Urbana, Ill., up to 3 p.m., Monday, July 17, 1922.

Plans and specifications may be obtained after June 20 from the office of the Supervising Architect upon deposit of Ten dollars ($10).

OFFICIAL PROPOSALS

Bids: July 6.

Drive Pipe

Memphis, Tenn.

Proposals will be received by the Memphis Artesian Water Department at its offices, 105-107 North Second Street, Memphis, Tennessee, until 12 o'clock noon Thursday, July 6, 1922, for furnishing f.o.b. Memphis, Tennessee:

5400 Lineal Feet 12 in. Drive Pipe with recessed couplings and thread protectors, approximate weight 51 lbs. per foot.
1150 Lineal Feet 18 in. outside diameter Drive Pipe with recessed couplings and thread protectors, approximate weight 81 lbs. per foot.
1500 Lineal Feet 8 in. Drive Pipe with recessed couplings and thread protectors, approximate weight 30 lbs. per foot.
1500 Lineal Feet 6 in. Drive Pipe recessed couplings and thread protectors, approximate weight 10 lbs. per foot.
25 12 in. Screw Couplings.
25 18 in. Screw Couplings.

Time of delivery, together with price, will be given due consideration in award of contract.

The Commissioners reserve the right to reject any or all bids. Address proposals to Board of Water Commissioners, Memphis Artesian Water Department, Memphis, Tennessee. Mark "Bid on Well Pipe."

W. H. HARRISON,
General Superintendent.

Bids: July 13.

Highway Work

Somerville, N. J.

Notice is hereby given that sealed bids will be received by the Borough of Somerville for the following: Construction of State Highway, Route No. 9, Section 0,7, Main Street, Somerville. Estimated amounts are as follows: Reinforced Cement Concrete Pavement, 12,933 sq.yd.; Armored Cement Concrete Curbing, 5,283 lin.ft. New Granite Block on a cement concrete foundation is 3,076 sq.yd.

Work is to be performed under Reimbursement Act, Chapter 246, laws of 1921.

Bids will be received at the Borough Hall at Somerville, N. J., on Thursday, July 13, 1922, at 7 p.m. (Standard Time).

Drawings, specifications and form of contract and bond of the proposed work are on file in the office of W. J. Hardin, Borough Engineer, at Newton, N. J., and Borough Collector's Office, Somerville, N. J., and in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders. Plans will be furnished on deposit of ten dollars ($10) upon application to W. J. Hardin, Borough Engineer. Bids must be made on the standard proposal forms in the manner designated therein and as required by the specifications, enclosed in sealed envelopes, addressed to the Mayor and Council of the Borough of Somerville, and bearing the name and address of the bidder and the name and section of the route on the outside. Bids must be accompanied by a certified check drawn to the order of J. K. Brokaw, treasurer, for not less than ten per cent (10%) of amount of the bid, provided that said certified check shall not be less than $500 nor more than $20,000, and be delivered at the above place on or before the hour named. Copies of the standard proposal form will be furnished on application to W. J. Hardin, Borough Engineer, or J. K. Brokaw, Borough Treasurer.

Each bidder must accompany his bid with a certificate from a surety company duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in and in accordance with the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications. Each bidder must also accompany his bid with a statement of equipment properly filled out.

By order of a resolution of the Common Council of the Borough of Somerville passed at a meeting held on Monday, June 19, 1922.

(SIGNED) J. B. VARLEY,
Borough Clerk.

OFFICIAL PROPOSALS

Bids: July 5.

Concrete Road Construction

Ridgefield Park, N. J.

Sealed bids or proposals for the improvement of Pershing Court in the Village of Ridgefield Park, N. J., will be received by the Board of Commissioners of said Village, at the Municipal Building, 234 Main St., Ridgefield Park, N. J., on Wednesday, July 5, 1922, at the hour of 8 P.M., Eastern Standard Time (9 P.M. Daylight Saving Time), ONLY.

Plans, details, profiles, specifications, approximate quantities and instructions to bidders, are on file with the Village Clerk at the Municipal Building, and may be examined any day, except Saturday, between the hours of 10 A.M. and 4 P.M.

The Board of Commissioners reserves the right to reject any or all bids.

(Signed) Board of Commissioners of the Village of Ridgefield Park.
By M. D. STARKER,
Village Clerk.

Dated June 12, 1922.

Sealed bids or proposals for the improvement of Chestnut Street in the Village of Ridgefield Park, N. J., will be received by the Board of Commissioners of said Village, at the Municipal Building, 234 Main St., Ridgefield Park, N. J., on Wednesday, July 5, 1922, at the hour of 8 P.M. Eastern Standard Time (9 P.M. Daylight Saving Time), ONLY.

Plans, details, profiles, specifications, approximate quantities and instructions to bidders, are on file with the Village Clerk at the Municipal Building, and may be examined any day, except Saturday, between the hours of 10 A.M. and 4 P.M.

The Board of Commissioners reserves the right to reject any or all bids.

(Signed) Board of Commissioners of the Village of Ridgefield Park.
By M. D. STARKER,
Village Clerk.

Dated June 12, 1922.

Bids: July 20.

Developing Water Supply

East Orange, N. J.

Notice is hereby given that sealed bids will be received in accordance with the law by the Board of Water Commissioners of the City of East Orange, New Jersey, at 8:00 o'clock p.m., Daylight Saving Time, on Thursday, the 20th day of July, A.D. 1922, at the office of the Board of Water Commissioners, 438 Main Street, East Orange, New Jersey, for furnishing materials and performing the labor required for developing a supply of water of not less than two million (2,000,000) gallons per twenty-four (24) hours from driven wells, in accordance with plans and specifications on file in the office of the Board of Water Commissioners, 438 Main Street, East Orange, New Jersey, and also in the office of the Consulting Engineers, Nicholas S. Hill, Jr., and S. F. Ferguson, 112 East 19th Street, New York City.

Copies of the plans and specifications may be obtained either from the office of the Board of Water Commissioners or from the Consulting Engineers, upon depositing Twenty-five ($25.00) Dollars, which sum will be refunded upon the return of the plans and specifications in good condition within ten (10) days after the 20th day of July, 1922, or else the entire deposit will be forfeited.

The work to be done includes all materials and labor, tools, plant and equipment necessary for construction, installing and completing ready for operation the following elements:

A. BUILDINGS AND STRUCTURES.
(1) Brick and concrete addition to the existing White Oak Ridge pumping station, having slate roof on steel trusses, approximately 24' x 50' x 30' high.
(2) Three (3) or more reinforced concrete well houses of the dimensions specified to be erected on the property of the City of East Orange known as the Dickinson Farm.
(3) One (1) reinforced concrete weir charmber.

B. MACHINERY AND EQUIPMENT.
(1) 1—Water tube steam boiler of approximately 132 horsepower capacity.
(2) 2—Unaflow steam engine driven alternating current electric generators, 3 phase, 60 cycle, 2300 volts, of 120 KVA. capacity each.
(3) 1—Steam turbine driven centrifugal pumping unit of 2 M.G.D. capacity complete with condensing equipment.

OFFICIAL PROPOSALS

(4) 3—or more motor driven centrifugal or reciprocating deep well pumps with a capacity of 0.75 to 1 M.G.D. each.
(5) 2—Condensers and vacuum pumps for unaflow steam engines.
(6) All piping and appurtenances incidental and necessary to the installation of the above equipment.

C. ELECTRIC EQUIPMENT.
(1) Electric transformers, switchboards, interior and exterior wiring and appurtenances.
(2) Electric transmission wood pole line, approximately twelve thousand (12,000') feet in length, complete with twenty-three hundred (2,300) volt power cable, and cable and wires for distant control and telephone circuits.

D. DRIVEN WELLS.
(1) Three (3) or more driven wells of a depth of approximatey one hundred and twenty-five (125') feet and of diameters specified.

E. PIPE AND APPURTENANCES.
(1) Furnishing and delivering eight thousand (8,000') feet of twenty (20") inch reinforced concrete or cast iron pipe together with special castings, valves, etc.
(2) Laying and installing complete eight thousand (8,000') feet of reinforced concrete or cast iron pipe complete with specials, valves, etc.

The work to be performed under the specifications is divided into fourteen sections, classified according to the character of the work and materials to be furnished.

Bidders will be allowed to bid on one or more sections.

Proposals must be accompanied by a certified check or bid bond from a reliable surety company authorized to do business in the State of New Jersey and satisfactory to the Board of Water Commissioners, in amount equal to twenty-five (25%) per cent of the proposal. The certified check will be retained to pay for any damage or loss to the City, or the liability of the bond will accrue, in case the successful bidder shall neglect or refuse to enter into a contract in accordance with his proposal.

The Board of Water Commissioners reserves the right to consider bids for ten (10) days after their receipt before awarding any contract and the right is reserved to accept any bid or combination of bids, or to reject any or all bids.

Board of Water Commissioners, City of East Orange, New Jersey.
By ROSWELL M. ROPER,
Secretary.

Bids: July 12.

Highway Work

Camden, N.J.

Notice is hereby given that sealed bids will be received by Charles F. Wise, Chairman of the Road Committee, for the construction of a portion of King's Highway, in the Township of Delaware, in the County of Camden, with a reinforced concrete surface estimated amount of concrete surface pavement required is 20,784 square yards and opened and read in public at the Court House, Camden, N. J., on Wednesday, July 12th, 1922, at a.m. Daylight Saving Time.

"Drawings, specifications and forms of bid, contract and bond for the proposed work, prepared by John J. Albertson, County Engineer, and approved by the State Highway Commission, have been filed in the office of the said engineer at the Court House, Camden, N. J., and of said State Highway Commission, Trenton, N. J., and may be inspected by prospective bidders during business hours. Bidders will be furnished with a copy of the specifications and blue prints of the drawings by the engineer on proper notice and payment of cost of preparation. Bids must be made on the standard proposal forms in the manner designated therein and required by the specifications, must be enclosed in sealed envelopes, bearing the name and address of bidder and name of road on the outside, addressed to Charles F. Wise, Chairman of the Road Committee, and must be accompanied by a Surety Company Bid Letter and a Certified Check for not less than ten (10) per cent of the amount of bid, provided said check shall not be less than $500.00 nor more than $20,000.00 and be delivered at the place and on the hour above named. The standard proposal form is attached to the specifications, copies of which will be furnished on application to engineer.

"By order of the Board of Chosen Freeholders,

FRED. W. GEORGE, Clerk.

OFFICIAL PROPOSALS

Bids: Aug. 15.

Hydro-Electric Project

Dothan, Ala.

Sealed proposals will be received by the Mayor and City Council of the City of Dothan, Alabama, until 2 o'clock p.m., Tuesday, August 15th, 1922, for constructing a Hydro-Electric Project with appurtenances, and furnishing materials and equipment, at High Bluff on the Choctawhatchee River about eight (8) miles from Hartford, Ala., in sections 9 and 4 of township 2N, Range 23E, Geneva County, Alabama. The work consists of the construction of an earth dam, a concrete spillway, abutments and power house, and the furnishing and placing of machinery.

The principal approximate quantities involved are the following:

51,000 cu.yds. of excavation.
380,000 cu.yds. of embankment.
18,500 cu.yds. of concrete of different classes.
1,900,000 pounds of reinforcing steel.
354,000 pounds of structural steel work.

Turbines, generators, transformers and auxiliary power house equipment for a present installation of approximately 3,000 bhp. capacity in two units.

A transmission line twenty-one and one-half (21½) miles long at 44,000 volts pressure.

Plans and specifications are on file at the office of the City Clerk at Dothan, Alabama, and at the office of The Ludlow Engineers at Winston-Salem, N. C., where they may be examined by prospective bidders.

Copies of the plans covering the construction details of this project and two copies of the specifications attached to the form of proposal and contract will be furnished by The Ludlow Engineers, Winston-Salem, N. C., upon application by prospective bidders accompanied by a check for twenty-five ($25.00) dollars to cover the cost, or, separate prints, and extra copies of specifications and form of proposal, etc., at one ($1.00) dollar each.

Each bid must be accompanied by a certified check for approximately five (5%) per cent of the bid.

Proposals will be received at the City Hall, Dothan, Alabama, and opened publicly wih the right reserved to accept any bid or to reject any or all bids as the best interests of the City may appear.

Plans and supervision by THE LUDLOW ENGINEERS, INC. Winston-Salem, N. C.

E. O. JONES, Mayor.
R. W. LISENBY, City Clerk.

Bids: July 7.

Timber, Sheathing, Flooring, etc.

Albany, N. Y.

Proposals for furnishing timber, sheathing, flooring, exterior facing lumber, etc., for the construction of Stable, State Camp of Instruction, near Peekskill, N. Y., will be received by the State Board of Armory Commissioners, at its office, 158 State Street, Albany, N. Y., until three o'clock p.m. (daylight saving time) on Friday, July 7, 1922, and then and there publicly opened and read.

Proposals must be made on proposal forms and enclosed in envelopes, both of which are furnished by the State, envelopes to be sealed and endorsed as directed in the proposal forms.

Proposal forms and envelopes may be obtained and copies of specification consulted at the above described office of the Board, at the State Camp of Instruction, near Peekskill, N. Y., and at the State Arsenal, 463 Seventh Avenue, New York City.

The right is reserved hereby to reject any or all bids.

STATE BOARD OF ARMORY COMMISSIONERS.
(By) FRANKLIN W. WARD, Secretary.
Dated: June 24, 1922. Albany, N. Y.

Bids: July 19.

Turbine and Accessories

New Orleans, La.

Sealed proposals will be received by the Sewerage and Water Board of New Orleans, up to 12 o'clock noon, Wednesday, July 19, 1922, for furnishing one 6,000 kw. turbine and accessories.

Specifications and blank forms of proposals may be obtained at Room 303, No. 526 Carondelet Street, New Orleans.

The right is reserved to reject any or all bids.

A. G. MOFFAT, Secretary
GEO. G. EARL, General Superintendent,
May 11, 1922.

OFFICIAL PROPOSALS

Bids: July 24.

Disposal Works

Hackensack, N. J.

The Hackensack Improvement Commission, the governing body of the City of Hackensack, Bergen County, New Jersey, request proposals for the construction and equipment of disposal works, flotation basins, force mains, a pumping station and certain other works, establishments and fixtures appurtenant thereto.

The foregoing works are more particularly described and set forth in the plans and specifications on file with Lemuel Lozier, Engineer of the Commission, and with the Clerk of the Commission.

The plans and specifications, information for bidders, forms of proposals and contracts, forms of bonds required, and other information can be seen at the office of Lemuel Lozier, Engineer of the Commission, Room 3, Bank Building, Main and Mercer Streets, Hackensack, New Jersey; copies of such plans and specifications may be obtained by bidders on making a deposit of $100, which deposit will be refunded upon the return of the plans and specifications in good condition.

All bids must be made upon a form of proposal to be obtained from the Engineer of the Commission, and must give the prices both in writing and figures, and must give such other information and be signed in the manner indicated on the form of proposal. All bids shall be accompanied by a certified check for $10,000 payable to the "Hackensack Improvement Commission."

Checks of the unsuccessful bidders will be returned immediately upon the award of the contract. The check of the successful bidder will be returned to the bidder upon the execution of the contract and the furnishing of the bonds required, within ten days after the date of the award thereof, or within such extended time as may be determined by the Commission. In case of failure to execute the required contract, and furnish the required bonds within such time, such check shall be forfeited to the Hackensack Improvement Commission as liquidated damages.

The proposals herein required shall be presented to the Hackensack Improvement Commission, at the Municipal Building, 346 State Street, Hackensack, Bergen County, New Jersey, on Monday, the 24th day of July, 1922, at 8 p.m., Daylight Saving time, 7 p.m. Standard Time.

No bids will be received prior to said hour, and none thereafter. The proposals shall be submitted in sealed envelopes or packages as follows:

"Proposal for Sewage Disposal Plant, Contract No. 1."

The Hackensack Improvement Commission reserves the right to reject any or all bids.

HACKENSACK IMPROVEMENT COMMISSION,
SPENCER D. BALDWIN, Mayor.
WILLIAM SCHAAF, Clerk.

Bids. July 28.

Municipal Light Plant

Homestead, Fla.

Sealed proposals will be received by the Mayor and Town Council, Homestead, Fla., on or before 8 P. M. Friday, July 28, 1922, and then publicly opened, for furnishing machinery equipment and supplies and installation and constructing certain building for electric light plant for the said town in accordance with plans and specifications on file in the engineer's office at Homestead, Florida.

The electric light system includes furnishing of two complete steam turbo-generator sets 300 KW, 3 phase, 60 cycle, 2300 volts, one ten panel switchboard, two boilers 150 to 200 H.P., one ten ton crane installation, building and all accessories.

Alternate bids will be received for equipment of equal capacity.

Each proposal must be accompanied by a certified check for 2% of the amount of the bid, made payable to the City Clerk, R. E. Edwards, Town of Homestead, Florida, as evidence of good faith.

Specifications, forms of proposals and general plan may be obtained from the engineer's office Homestead, Fla.

The right is reserved to reject any or all bids.

S. E. LIVINGSTON, Mayor
R. E. EDWARDS, Clerk
B. M. DUNCAN, Engineer,
Town of Homestead.

OFFICIAL PROPOSALS

Bids: July 11.

Concrete Filter Plant Substructures Contract No. 1

Buffalo, N. Y.

Sealed proposals for the construction of a coagulating basin, clear water reservoir, filter boxes, substructure of pumping station, conduits and other appurtenances in connection with the filter plant for the City of Buffalo, N. Y., will be received by the Commissioner of Public Works at his office in the Municipal Building, Buffalo, N. Y., until eleven a.m., daylight saving time, on Tuesday the eleventh day of July, 1922.

Copies of the plans and specifications may be seen at the office of the Engineer of the Filtration Division, Bureau of Water, Porter Avenue, Buffalo, N. Y., and copies of the plans, specifications, contract and form of proposal may be obtained at this office upon the deposit of $25.00 for each set furnished, which sum will be refunded if the plans and specifications are returned within 30 days after bids have been received and acted upon. Plans and specifications may also be seen at the office of Fuller & McClintock, Consulting Engineers, 170 Broadway, New York.

Proposals must be made on the blank forms furnished and must be sealed and endorsed—"Proposal for Filter Plant Substructures." Each proposal must be accompanied by a certified check in the amount of $150,000.00.

The principal estimated quantities are approximately as follows:

Earth excavation, 350,000 cu.yds.
Earth embankment, 110,000 cu.yds.
Rock excavation, 7,000 cu.yds.
Concrete masonry, 50,000 cu.yds.
Steel reinforcement, 3,500 tons.
Placing piping and iron and steel work furnished by the City, 580 tons.

The principal structures are a reinforced concrete coagulating basin about 304 ft. x 408 x 26 ft. average depth, a reinforced concrete clear water reservoir 330 ft. x 510 ft. x 25 ft. average depth, and 40 reinforced concrete filter boxes each about 33 ft. x 50 ft. x 9 ft. deep.

The work is located in the City of Buffalo, on the water front south of Jersey Street.

The City reserves the right to reject any or all bids in case this is deemed to be for the interest of the City.

GEORGE C. ANDREWS,
Engineer, Filtration Division.

Bids: July 11.

Street Paving

Covington, Va.

Sealed proposals will be received by the Mayor of Covington, Va., up to 7:30 p.m. Tuesday, July 11th, 1922, at the Council Chamber, Masonic Building, Covington, for furnishing all labor and materials and constructing the following amount of Paving; approximate estimate:

4300 Cubic Yards Grading,
8480 Square Yards Sheet Asphalt, concrete base and 3 inch top,
1450 Square Yards Hill-Side Brick Paving, concrete case,
280 Square Yards Plain Vitrified Brick Paving, concrete base,
5050 Lin. Feet Plain Concrete Curb, 20 inches deep, set on Slag,
320 Lin. Feet Armored Circular Curb, 20 inches deep, set on Slag,
5350 Lin. Feet Concrete Gutter 18 inches wide,
92 Lin. Feet Concrete Gutter 24 inches wide,
244 Lin. Feet Concrete Margin Curb,
9 30-Inch Cast Iron Frames and Grates for Inlets,
60 Vertical Feet of Brick Work for Inlets,
220 Lin. Feet 12 in. T. C. Pipe Connecting Inlets.

Specifications and information concerning the work may be obtained on application to C. P. Barnett, Consulting Engineer, Covington, Virginia. A deposit of $5.00 will be required for each copy of specifications and on return of same the deposit will be refunded.

A certified check for $500.00 made payable to the order of B. R. Hoper, Mayor of Covington, Va., must accompany each bid.

The Town reserves the right to reject any or all bids. Bids will be made on a basis of cash payments for all work done.

C. P. BARNETT,
Consulting Engineer.

OFFICIAL PROPOSALS

Bids: July 19.

Excavation of Reservoir

Saugerties, N. Y.

Sealed proposals for the excavation of about thirty thousand cubic yards of material, the cleaning and necessary additional excavating for and the laying of an eighteen inch temporary water main for a distance of about eight hundred feet, the construction of a cofferdam across the inlet and other work incidental to the increasing the present storage capacity of the Saugertiec Village Reservoir situated at Blue Mountain in the Town of Saugerties, County of Ulster, N. Y., will be received by the Board of Water Commissioners of the Village up to two o'clock daylight savings time, in the afternoon on the 19th day of July, 1922, at their office on Market Street, Saugerties, N. Y., at which place and hour the bids will be publicly opened and read.

Specifications, proposal blanks, forms of contract and bond and information for bidders may be seen at the Board of Water Commissioners, Market Street, Saugerties, N. Y., and copies of same may be obtained upon application to J. F. Loughran, Civil Engineer, Kingston, N. Y., upon deposit of five dollars, which deposit will be refunded when specifications are returned in good condition.

A certified check of five per cent (5%) of the amount of the bid made payable to the Board of Water Commissioners, Saugerties, N. Y., must accompany the bid as a guarantee that the contract will be entered into if awarded.

A bond in the sum of one hundred per cent (100%) of the contract price will be required.

The Board of Water Commissioners reserve the right to reject any or all bids as it may deem to be for the best interest of the Village of Saugerties, N. Y.

J. CHARLES SUDERLEY,
President.
E. CLARK REED, Secretary.
J. F. LOUGHRAN, Engineer,
Dated: June 9, 1922.

Bids: July 25.

Barge Canal Terminals

Albany, N. Y.

Sealed proposals will be received by the undersigned at his office in the Capitol at Albany, N. Y., until twelve o'clock noon of Tuesday, July 25, 1922, at which place and hour they will be publicly opened and read, for the construction of Barge canal terminals pursuant to the provisions of Chapter 746 of the Laws of 1911, and amendatory laws, and Chapter 402 of the Laws of 1920, as follows:

—1—

TERMINAL CONTRACT NO. 89

For paving a portion of the terminal site, constructing railroad and crane tracks, electrical work and details incidental thereto, at Syracuse.

Contract plans, sheets 1 to 4 inclusive.

—2—

TERMINAL CONTRACT NO. 90

For dredging a portion of the Henry Street slip at Gowanus Bay, Borough of Brooklyn, New York City.

Contract plans, sheet No. 1.

Plans may be seen and detailed specifications, engineer's estimates of quantities, proposal blanks, form of contract and bonds required and other information for proposers may be had at the office of the Superintendent of Public Works at Albany, N. Y., at the office of the Assistant Superintendent of Public Works for the Middle Division at Syracuse, N. Y., at the office of the Assistant Superintendent of Public Works for the Western Division at Rochester, N. Y., at the offices of the Superintendent of Public Works, Erie Basin Terminal, Buffalo, N. Y., and Terminal Warehouse, Pier 6, East River, New York City.

Blueprint copies of plans will be furnished by the State Engineer and Surveyor upon the receipt at his office in the Telephone Building, Albany, N. Y., of payment at the rate at fifteen cents (15c.) per sheet. Refund will not be made for any blueprints which may be returned.

Monthly estimates will be paid of ninety per centum (90 per cent) of the work done at the contract price. Every proposal for said work must be accompanied by a money deposit in the form of a draft or certified check upon some good banking institution in the city of Albany or New York, issued by a national or state bank or trust company in good credit within the state and payable at sight to the Superintendent of Public Works for five per centum (5 per cent) of the amount of the proposal.

The person whose proposal shall be accepted will be required to execute a contract and furnish bonds within ten days from the date of notice of award delivered to him or them in person or mailed to the address given in the proposal.

Upon execution of the contract and approval of bonds, the certified check or draft will be returned to the proposer unless the same shall have been presented for collection prior to such time in which case the amount of the deposit will be refunded by the Superintendent of Public Works.

The deposits of bidders other than the one to whom the award of contract shall be made will be returned immediately after the award has been made.

The bond required for the faithful performance of the contract shall be in such sum as shall be fixed by the Superintendent of Public Works, which sum shall not be less than twenty per centum (20 per cent) of the estimated cost of the work, according to the contract price, and an additional bond, known as the labor bond, in the sum of ten per centum (10 per cent) of the amount of the estimated cost of the work according to the contract price, will be required as security that the contractor will pay in full at least once in each month all laborers employed by him upon the work specified to be done in the contract.

In the event that more than one surety company is offered as surety on said bonds co-insurance only will be accepted.

Each proposal must be addressed to the Superintendent of Public Works, Albany, N. Y., and must be endorsed on the envelope with the name of the construction for which the proposal is made.

Award, if made, will be made to the person or persons whose proposal shall be lowest in cost to the state for doing the work, and which shall comply with all provisions required to render it formal. Before any award shall be made the lowest bidder will be required to satisfy the Superintendent of Public Works of his ability to provide suitable equipment and materials for the proper performance of the work.

The right is reserved to reject all proposals and readvertise and award the contract in the regular manner if, in the judgment of the undersigned, the interests of the state will be enhanced thereby.

CHARLES L. CADLE,
Superintendent of Public Works.
June 22, 1922.

Bids: July 10.

Equipment for New York Canals

Albany, N. Y.

Sealed proposals will be received by the undersigned at his office in the Capitol at Albany, N. Y., until twelve o'clock noon of Monday, July 10, 1922, at which place and hour they will be publicly opened and read, for furnishing certain equipment for the New York State canals pursuant to the provisions of Chapter 532 of the Laws of 1922, as follows:

A—1—

CRESCENT POWER HOUSE,
COHOES, N. Y.

For furnishing and delivering two hydraulic turbines with governor equipment and extra parts for proposed power house at Crescent dam, Cohoes, N. Y.

Sheets 1 and 2 inclusive.

A—2—

CRESCENT POWER HOUSE,
COHOES, N. Y.

For furnishing two water wheel driven generators and other electrical equipment in the proposed power house at Crescent dam, Cohoes, N. Y.

Sheets 1 and 2 inclusive.

Plans may be seen and detailed specifications, engineer's estimate of quantity, proposal blanks, forms of contract and bonds required, and other information for proposers, may be had at the office of the Superintendent of Public Works at Albany, N. Y., at the office of the Assistant Superintendent of Public Works for the Eastern Division, Wedgeway building, Schenectady, N. Y., at the office of the Assistant Superintendent of Public Works for the Middle Division at Syracuse, N. Y., at the office of the Assistant Superintendent of Public Works for the Western Division at Rochester, N. Y., at the offices of the Superintendent of Public Works, Erie Basin Terminal, Buffalo, N. Y., and Terminal Warehouse, Pier 6, East River, New York City.

Copies of detailed plans or drawings may be obtained from the State Engineer and Surveyor at Albany, N. Y., upon payment to him of the cost of producing them.

Monthly estimates will be paid of ninety per centum (90 per cent) of the work done at the contract price. Every proposal for said work must be accompanied by a money deposit in the form of a draft or certified check upon some good banking institution in the city of Albany or New York, issued by a national or state bank in good credit within the state and payable at sight to the Superintendent of Public Works for five per centum (5 per cent) of the amount of the proposal.

The person whose proposal shall be accepted will be required to execute a contract and furnish bonds within ten days from the date of notice of award delivered to him or them in person or mailed to the address given in the proposal.

Upon execution of the contract and approval of bonds, the certified check or draft will be returned to the proposer unless the same shall have been presented for collection prior to such time, in which case the amount of the deposit will be refunded by the Superintendent of Public Works.

The deposit of bidders other than the one to whom the award of contract shall be made will be returned immediately after the award has been made.

The bond required for the faithful performance of the contract shall be in such sum as shall be fixed by the Superintendent of Public Works, which sum shall not be less than twenty per centum (20 per cent) of the estimated cost of the work, according to the contract price, and an additional bond known as the labor bond, in the sum of ten per centum (10 per cent) of the amount of the estimated cost of the work according to the contract price, will be required as security that the contractor will pay in full at least once in each month all laborers employed by him upon the work specified to be done in the contract.

In the event that more than one surety company is offered as surety on said bonds co-insurance only will be accepted.

Each proposal must be addressed to the Superintendent of Public Works, Albany, N. Y., and must be endorsed on the envelope with the name of the construction for which the proposal is made.

Award, if made, will be made to the person or persons whose proposal shall be lowest in cost to the State for doing the work, and which shall comply with all provisions required to render it formal. Before any award shall be made the lowest bidder will be required to satisfy the Superintendent of Public Works of his ability to provide suitable equipment and materials for the proper performance of the work.

The right is reserved to reject all proposals and readvertise and award the contract in the regular manner, if, in the judgment of the undersigned, the interests of the state will be enhanced thereby.

CHARLES L. CADLE,
Superintendent of Public Works.
June 21, 1922.

Bids: July 5.

Street and Public Improvements

Reading, Pa.

Sealed proposals will be received at the office of the City Clerk, Reading, Pa., until 9:45 a.m. (Daylight Saving Time), Wednesday, July 5, 1922, for the following work:

APPROXIMATE QUANTITIES

18,000 sq.yd. sheet asphalt paving on concrete base.
1,025 sq.yd. laying granite block paving.
1,060 sq.yd. brick paving for gutters.
1,550 sq.yd. concrete base.
170 lin.ft. concrete radius corners.
48 lin.ft. granite radius stones.
Remodeling six (6) catch basins.
Constructing three (3) new catch basins and appurtenances.

Plans and specifications may be obtained by prospective bidders by making a deposit of ten dollars ($10) with the City Engineer, City Hall, Reading, Pa., who will also furnish any other information which may be desired. Deposits made for plans and specifications will be returned to those bidding.

Proposals must be marked "Proposal for Street Paving" and addressed to the City Clerk, City Hall, Reading, Pa.

Contractors will be required to comply with the Act of July 18, 1917, P. L. 1083, relative to Workmen's Compensation Insurance, and proof must be furnished the Department by the said contractors that they have accepted the provisions of the said Act, and has insured his liability thereunder or secured exemption therefrom.

The right is reserved to reject any or all bids.

By order of
WILLIAM B. YEAGER,
Superintendent.
EDMUND B. ULRICH, City Engineer.
June 23, 1922.

OFFICIAL PROPOSALS

Bids: Aug. 4.

Bridge Superstructure, Machinery and Electrical Equipment

Seattle, Wash.

Sealed proposals will be received by the Board of Public Works of the City of Seattle, up to 10 o'clock a.m., Friday, August 4th, 1922, in room 234, County-City Building, for the fabrication and erection of the Super-structure, Machinery and Electrical Equipment of a Steel Bascule Bridge and two Side Spans over the West Waterway at West Spokane Street, under authority of Ordinance No. 43397.

The structure will comprise a double-leaf bascule span 288 feet center to center of trunnions, 2 approach spans each about 140 feet long and a steel girder span about 136 feet long. The width of the bascule span will be 45 feet center to center of trusses and of the side spans 52 feet center to center of trusses, and of the girder span about 40 feet.

No proposal will be considered except as same is made strictly in conformity with the advertisement therefor and upon the forms of proposals furnished by the Board of Public Works, bound together with the specifications, general clauses and form of contract which must be submitted unbroken and unaltered in every particular.

This improvement shall be made in accordance with the respective plans and specifications now on file in the offices of the Secretary of the Board of Public Works and the City Engineer, respectively.

The successful bidder will be required to file with the City Comptroller a bond in the sum specified in the specifications.

Each bid must be accompanied by money, a satisfactory surety company bid bond approved by the Mayor and City Comptroller as to sufficiency and the Corporation Counsel as to form, or a certified check payable to the order of the City Comptroller of the City of Seattle for a sum not less than five (5) per cent of the total amount of bid, and no bid will be considered unless so accompanied.

A deposit of Ten Dollars ($10.00) will be required for each set of plans and specifications, which will be returned upon return of the plans in good order.

Special attention of bidders is called to the State Law and City Charter regarding the number of hours constituting a day's work, minimum wage scale, American citizenship and heads of families.

The Board of Public Works reserves the right to reject any or all bids.

By order of the Board of Public Works.
C. B. BAGLEY,
Secretary.

First publication June 20, 1922.

Bids: July 11.

Highway Work

Albany, N. Y.

Sealed proposals will be received by the undersigned at their office, No. 55 Lancaster Street, Albany, N. Y., at one o'clock p.m. on Tuesday, the 11th day of July, 1922, advanced standard time which is twelve o'clock noon eastern standard time, for the improvement of highways in the following counties:

Cattaraugus.....(one highway: 4.15)
Chenango.....(one highway: 8.82)
Delaware.....(two highways: 7.59 & 7)
Madison.....(one highway: 1.60)
St. Lawrence.....(one highway: 10.14)
Washington.....(one highway: 0.62)
Wyoming.....(one highway: 4.68)
Yates.....(one highway: 2.92)

ALSO FOR THE RECONSTRUCTION OF THE FOLLOWING:

Chenango.....(one contract: 1.27)

Maps, plans, specifications and estimates may be seen and proposal forms obtained at the office of the Commission in Albany, N. Y., and also at the office of the division engineers in whose division the roads are to be improved or reconstructed. The addresses of the division engineers and the counties in which they are in charge will be furnished upon request.

The especial attention of bidders is called to "General Information for Bidders" in the itemized proposal, specifications and contract agreement.

HERBERT S. SISSON,
Commissioner.

J. C. FINCH,
Secretary.

Bids: July 18.

Concrete Flood Gate and Appurtenances

Little Rock, Ark.

Sealed proposals will be received by the Secretary of the Farelly Lake Levee District at the Marion Hotel, Little Rock, Ark., until 2 p.m., Tuesday, July 18, 1922, for the construction of a Concrete Flood Gate and Appurtenances at Big Bayou Meto, Gillett, Arkansas County, Ark. Following are the approximate quantities:

Excavation.....50,000 cu.yd.
Round foundation piles.....24,000 lin.ft.
Steel sheet pile cut off walls..20,000 sq.ft.
Concrete.....6,500 cu.yd.
Reinforcing steel.....200 tons
Gates and accessories.....150 tons
Hand rail, 2-in. GI pipe and fittings.....1,500 lin.ft.
Hand rail, 1¼-in. GI pipe and fittings.....1,000 lin.ft.
Hoisting apparatus.....30 tons

Detail plans, specifications and blank forms of proposal are on file at the office of A. W. Dobyns, Attorney, Little Rock, Ark., and at the office of Ayres & Miller, McCall Building, Memphis, Tenn.

Detail plans, specifications and proposal forms will be furnished upon application accompanied by a certified check for twenty ($20) dollars.

Each proposal shall be accompanied by a certified check for fifteen thousand ($15,000) dollars made payable to the Secretary of the Board.

This check is to be conditioned that, if the bid is accepted, a contract will be entered into and the performance of same secured within ten (10) days after notification of acceptance of bid. Successful bidder will be required to furnish a surety bond in an acceptable surety company in the sum of fifty (50%) per cent of the contract price.

The right is reserved to reject any or all bids and to waive any technical defects, as the interests of the district may require.

The Engineers, or their assistants, will be at Gillett, Ark., from July 10 to July 15 to show prospective bidders over the work.

JOHN M. GRACIE, Chairman
Board of Commissioners.

J. B. QUINN, Secretary,
Gillett, Arkansas.

AYRES & MILLER, Engineers,
McCall Building, Memphis, Tennessee.

Bids: July 12.

Road Work

Atlantic City, N. J.

Sealed bids will be received by the Board of Chosen Freeholders of Atlantic County, N. J., at 12 o'clock noon (Daylight Saving Time) on July 12, 1922, during a regular meeting of said Board at the Freeholders' meeting room in the Guarantee Trust Bldg., Atlantic City, N. J., for the reconstruction of a section of Mays Landing-Downstown Road known as Hamilton Township Section, in the County of Atlantic and State of New Jersey, with a Warrenite-Bitulithic pavement on a six inch 1-3-5 concrete base; estimate amount of surface pavement and concrete base required is 88,070 sq.yd., together with gravel shoulders, excavation and embankment, drainage provisions, guard rail and other items; said bids to be opened and read in public at the aforesaid time and place.

Drawings, specifications and form of bid, certificate of surety, contract and bond, covering proposed work, are on file in the office of the County Engineer at 636 Guarantee Trust Bldg., Atlantic City, N. J., where they may be inspected and a prospective bidder may secure a copy of the specifications and blueprints of the plans upon the deposit of $10, and this deposit will be refunded provided the plans and specifications are returned to the County Engineer's Office in good condition by noon on July 12, 1922. Each bid must be made on the standard proposal form in the manner required by the specifications and must be accompanied by a certified check, or cash, in the amount of $20,000.

A contract will be awarded, if awarded at all, within one month of the date of receiving bids and such award will be made subject to the sale and delivery of bonds to be issued for the purpose of financing the reconstruction. The right is reserved to reject any or all bids.

By Order of the Board of Chosen Freeholders of Atlantic County, N. J.
F. W. WILLETTS, Clerk.

Bids: July 14.

Highway—Route No. 1 Section No. 13

Trenton, N. J.

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commission of New Jersey for the construction of the following:

Route No. 1—Section No. 13 from Highland Park to Stelton Road, Middlesex County; estimated amount of Warrenite Bitulithic Pavement on a nine (9) inch Portland Cement Concrete foundation, 32,811 Square Yards.

Bids will be received at the office of the State Highway Commission at the Broad Street Bank Building, Trenton, New Jersey, on Friday, July 14th, 1922, at 11 A.M. Standard Time, and opened and read immediately thereafter.

Drawings, specifications and form of bid, contract, and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders. Plans will be furnished on deposit of Ten Dollars ($10.00) upon application to the State Highway Department, 9th floor, Broad Street Bank Building, Trenton, New Jersey. Bids must be made on the standard proposal forms in the manner designated therein and as required by the 1922 specifications, same to be enclosed in sealed special addressed envelopes bearing the name and address of bidder and the name and section of the route on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten per cent (10%) of the amount of the bid, provided that said certified check shall not be less than $500.00 or more than $20,000.00, and be delivered at the above place on or before the hour named. Copies of the standard porposal form and special addressed envelope will be furnished on application. Bids not enclosed in special envelopes will be considered informal and will not be opened.

Each bidder must accompany his bid with a certificate from a surety company duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in and in accordance with the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications. Each bidder must also accompany his bid with a Statement of Equipment properly filled out.

By order of the State Highway Commission.

A. LEE GROVER,
Chief Clerk.

Bids: July 5.

Ornamental Lights

Long Branch, N. J.

Public notice is hereby given that sealed proposals are invited and will be received for installing Ornamenetal Lights on Liberty Street, Union Avenue, Second Avenue from Broadway to Union Avenue; Rockwell Avenue from Broadway to Union Avenue by the Board of Commissioners of the City of Long Branch, N. J., July 5, 1922, at 8 o'clock in the evening in the City Council Chambers, or as soon thereafter as the matter may be brought on. Plans and specifications as approved by the Board of Commissioners are on file in the office of the City Clerk, and may be obtained any time during business hours, upon a deposit of $10, which said amount will be returned at the time the bids are opened, upon surrender of said plans and specifications in good condition.

All bids must be sealed marked, "Bids for Ornamental Lighting," and addressed to Frank C. Quinn, City Clerk. No bid will be considered unless accompanied by a certified check for ten per cent of the amount bid on the proposed work, drawn to the order of Frank L. Howland, treasurer, or cash in equal amount. The Board of Commissioners reserve the right to reject any or all bids if deemed to the best interest of the Board so to do.

FRANK C. QUINN, City Clerk.

Dated: Long Branch, N. J.,
June 20, 1922.

OFFICIAL PROPOSALS

Bids: July 6.

Highway Bridge

Annapolis, Md.

Sealed proposals will be received by the Board of County Commissioners of Anne Arundel County, Maryland, until 12 p.m., July 6, 1922, for the construction of a Highway Bridge across South River at Riverview to a point connecting the Public Road at Tuckers Landing.

In general the contract is to include a bridge 1,680 feet long with not less than a 14 foot clear driveway and with a draw span, fenders, abutments, and approaches complete in every detail and ready for operation.

It is the intention of the Board of County Commissioners to construct the most permanent and complete highway bridge possible under provisions of an act passed by the General Assembly of Maryland authorizing the construction of the said bridge at a cost not to exceed ($50,000) fifty thousand dollars.

Each bidder must submit his own plans and specifications with his bid, and must furnish bond for the proper and satisfactory completion of the contract.

More exact and complete information may be had by application to the County Road Engineer, Annapolis, Md.

The right is reserved to reject any or all bids if deemed to the best interests of the County to do so.

COUNTY COMMISSIONERS OF ANNE ARUNDEL COUNTY.
S. O. TILGHMAN,
Clerk.

Bids: July 14.

Curb, Gutters and Sewers

Ann Arbor, Mich.

Sealed proposals will be received by the Board of Public Works, Ann Arbor, Michigan, through the City Clerk, on or before 7:30 p.m., Eastern Standard Time, July 14, 1922, for the construction of concrete curb and gutter in curb and gutter Districts Nos. 24 to 49 inclusive, also for the construction of lateral sewer in Lateral Sewer District No. 112 and for a storm sewer on Brooks St., from Pearl St. to Miller Ave. Approximate quantities are as follows:

53,200 lin.ft. combined curb and gutter.
680 lin.ft. 10 in. vitrified pipe.
1,200 lin.ft. 12 in. vitrified pipe.
1,240 lin.ft. 15 in. vitrified pipe.
250 lin.ft. 18 in. vitrified pipe.
480 lin.ft. 22 in. vitrified pipe.
2,000 cu.yds. excavation and backfilling.

Plans and specifications are on file in the City Engineer's Office. A certified check for 5% of the bid must accompany each bid as guarantee of good faith of bidder and the Board of Public Works reserves the right to reject any and all bids.

ISAAC G. REYNOLDS,
City Cerk.

OFFICIAL PROPOSALS

Bids: July 12.

Waterworks

Vero, Fla.

Sealed proposals will be received by the City Council of the City of Vero, Fla., at the City Hall until 8 P.M. July 12, 1922, for a Water Works System. Separate bids will be received as follows:

SECTION 1. "Watermains." This will include cast iron pipe as follows: 1070 ft. of 10-in., 3840 ft. of 8-in. and 9360 ft. of 6-in.; 37 fire hyddrants and gate valves as follows: 1 10-in., 3 8-in., and 4 6-in.

SECTION 2. "Water Tower." This will include a 75,000 gal. steel tank on a 108 ft. tower, cast-iron riser pipe, and concrete foundations.

SECTION 3. "Pumping Plant." This will include motor driven centrifugal fire and service pumps of 750 and 500 G.P.M. capacity respectively, concrete foundations, piping and valves and a corrugated iron building.

SECTION 4. "Water Treatment Plant." This will include a continuous lime-soda softener of 12,500 gal. per hr. capacity, of reinforced concrete construction, and a spray nozzle aerator with a reinforced concrete basin and a 210 G.P.M. low lift pump.

SECTION 5. "Artesian Well." This will include the drilling and casing of an 8-in. well approximately 650 ft. deep.

The City reserves the right to award contract to separate bidders on the separate sections of the work, or to reject any or all bids, and to waive defects.

All bids must be upon the blank forms provided in the Proposal, Specifications and Contract.

Each bid must be accompanied by a certified check for 5% of the amount of the bid, and the Contractor must provide a construction bond for 25% of his bid.

Plans, specifications and form of contract and bond may be examined at the office of Carter and Damerow, Engineers for the City, at Vero, Fla., or sets may be obtained from them by making a deposit of Twenty-five (25) Dollars, Fifteen (15) Dollars of which will be refunded on their return within fifteen (15) days following the date of opening of bids.

FRED E. KING, Mayor.
GEO. M. WILLING, Clerk.

Bids: July 17.

Heating, Plumbing and Electrical Work

Urbana, Ill.

Sealed proposals for the Heating and Ventilating, Plumbing and Electrical Work on the New Agricultural Building to be erected for the University of Illinois at Urbana, will be received at the office of James M. White, Supervising Architect, 256 Administration Building, Urbana, up to 3:00 p.m. Monday, July 17, 1922.

Plans and specifications may be obtained after June 30th from the office of the Supervising Architect upon deposit of Ten Dollars ($10.00).

OFFICIAL PROPOSALS

Bids: July 14.

Highway—Route No. 1 Section No. 14

Trenton, N. J.

NOTICE IS HEREBY GIVEN that sealed bids will be received by the State Highway Commission of New Jersey for the construction of the following:

Route No. 1—Section No. 14 from Stelton Road to Metuchen, Middlesex County; estimated amount of Warrenite Bitulithic Pavement on a nine (9) inch Portland Cement Concrete foundation, 49,855 Square Yards.

Bids will be received at the office of the State Highway Commission, at the Broad Street Bank Building, Trenton, New Jersey, on Friday, July 14th, 1922, at 11 A.M., Standard Time, and opened and read immediately thereafter.

Drawings, specifications and form of bid, contract and bond for the proposed work are on file in the office of the State Highway Department, Trenton, New Jersey, and may be inspected by prospective bidders. Plans will be furnished on deposit of Ten Dollars ($10.00) upon application to the State Highway Department, 9th floor, Broad Street Bank Building, Trenton, New Jersey. Bids must be made on the standard proposal forms in the manner designated therein and as required by the 1922 specifications, same to be enclosed in sealed special addressed envelopes bearing the name and address of bidder and the name and section of the route on the outside, and must be accompanied by a certified check drawn to the order of the Treasurer of the State of New Jersey for not less than ten per cent (10%) of the amount of the bid, provided that said certified check shall not be less than $500.00 or more than $20,000.00, and be delivered at the above place on or before the hour named. Copies of the standard proposal from and special addressed envelope will be furnished on application. Bids not enclosed in special envelopes will be considered informal and will not be opened.

Each bidder must accompany his bid with a certificate from a surety company duly authorized to do business in this State, stating that such surety company will provide said bidder with a bond in such sum as is required in and in accordance with the provisions of said specifications, conditioned for the faithful performance of the provisions of the contract and specifications. Each bidder must also accompany his bid with a Statement of Equipment properly filled out.

By order of the State Highway Commission.

A. LEE GROVER,
Chief Clerk.

Bids: July 18.

Water Works Improvements

Wilmington, N. C.

Sealed proposals will be received until 12 o'clock noon on the 18th day of July, 1922, at the office of the Commissioner of Public Works, Wilmington, N. C., for furnishing materials for and the work of constructing additions to the present water purification plant and extending the water intake line approximately two miles.

The work will include approximately 650 ft. of 24 in. cast iron ball and socket pipe laid under the Cape Fear River at a depth of 36 ft. and also 10,350 ft. of 42 in. wood, cast iron, or concrete pipe laid at an average depth of approximately 9 ft. below water level to Toomers Creek.

Bids will be considered on parts of the work separately or on the furnishing of materials independent from the construction work.

A certified check to the amount of 5% will be required with each bid and the right is reserved to reject any or all bids.

Plans and specifications may be obtained upon a deposit of $10.00 from the Carolina Engineering Co., Engineers, 412 Southern Building, Wilmington, N. C., or from

R. C. CANTWELL,
Commissioner of Public Works.
June 21, 1922.

You Think You Know Values—But—?

¶If in purchasing a steam shovel you were considering one at $8000 and another at $10,000 and the $10,000 one would do twice the amount of work of the other at 25% additional cost, you would take the highest priced one because it would quickly pay for itself and then pay you. ¶That's just good business judgment. ¶Well then, just answer this question: When you have a choice of the ordinary contract bond service and Swart Contract Bond Service—both at identically the same price and Swart delivering the maximum of a highly specialized service, Swart looks like the logical buy, doesn't it? ¶It might pay you well to read that over again.

HARMON V. SWART
Contract Bonds *Compensation Insurance*
92 William Street, New York

CONTRACT BONDS FOR RESPONSIBLE CONTRACTORS

When you require a contract bond, insist that the Ætna write it and you will be well and promptly served.

ÆTNA CASUALTY AND SURETY COMPANY

HARTFORD, CONN. AGENTS EVERYWHERE

OFFICIAL PROPOSALS

Bids, July 10.

Sewerage and Water System

Lebanon, Tennessee.

Sealed bids will be received by the City of Lebanon, Tennessee, at the office of City Clerk until 4 p.m., July 10, 1922, for the Construction of a Sewerage System and Disposal Plant, also Extension of Water System with a Steel Reservoir Tank, as per plans and specifications furnished by A. B. Clenny, City Engineer.

All bids must be sealed, and addressed to A. B. Clenny, Engineer, Lebanon, Tennessee, and marked "Sewerage and Water Bids."

Plans and specifications may be obtained from City Engineer upon deposit of twenty five ($25.00) dollars, refundable upon return of same.

Cashier's check in the sum of five (5%) per cent of total amount bid, payable to order of A. B. Clenny, Engineer, must accompany bids.

Bond with approved sureties for fifty (50%) per cent of the amount of contract will be required of successful bidder.

The City Commissioners reserve the right to reject any or all bids.

A. B. CLENNY,
City Engineer.

Bids, July 10.

Concrete Power House

Ada, Ohio.

The Ohio Northern University, Ada, Ohio, has postponed awarding of a contract for a 45 x 75 reinforced concrete power house until July 10, 1922. A deposit of $5.00 is required for a set of plans and specifications. The full amount will be refunded upon return of the set.

For further information write to
C. C. CARPENTER, Engineer,
Ada, Ohio.

U. S. GOVERNMENT

UNITED STATES ENGINEER OFFICE, Baltimore, Md. Sealed proposals will be received here until 1 p.m., July 7, 1922, and then opened, for dredging Wicomico River, Maryland. Further information on application.

U. S. GOVERNMENT

TREASURY DEPARTMENT, Supervising Architect's Office, Washington, D. C., June 24, 1922.—SEALED PROPOSALS will be opened in this office at 3 p.m., July 20, 1922, for construction of new mailing shed at United States Post Office, Sheboygan, Wis. Drawings and specification may be obtained from the Custodian at the building, or at this office, in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect.

PROPOSALS FOR STEEL LADDER, PIPE, ETC.—U. S. Engineer Office, 329 Custom House, New Orleans, La.—Sealed proposals will be received here until 11 a.m., July 17, 1922, and then opened, for constructing and delivering steel ladder, pipe, gears and shafting for U. S. dredge "Gulfport." Further information on application.

SEALED PROPOSALS will be received and publicly opened in the office of the Director of the U. S. Veterans' Bureau, Room 1044 Arlington Building, Vermont Ave. and H. St., N.W., Washington, D. C. July 3, 1922, at 11 a.m. for the construction of concrete foundations for nine (9) patient buildings for 400 bed Hospital to be built at Northampton, Mass. Plans and specifications may be obtained upon deposit of $50.00 from the office of the Quartermaster General, Room 2306 Munitions Building, Washington, D. C., or from the office of the Constructing Quartermaster, Chamber of Commerce Building, Northampton, Mass.

TREASURY DEPARTMENT, Office of the Supervising Architect, Washington, D. C., June 19, 1922—Sealed proposals will be opened in this office at 3 p.m., July 19, 1922, for restoration of stone cornice and replacing of roof construction, etc., for the United States Post Office and Customhouse, at Oswego, N. Y. Drawings and specifications may be obtained from the Custodian at Oswego, N. Y., or at this office in the discretion of the Supervising Architect. Jas. A. Wetmore, Acting Supervising Architect.

U. S. GOVERNMENT

U. S. ENGINEER OFFICE, Pittsburgh, Pa. Sealed proposals will be received here until 12 noon (Eastern time) July 19, 1922, and then opened, for furnishing and delivering one steel derrick boat hull. Further information on application.

OFFICE, CONST. Q. M., Chanute Field, Rantoul, Ill. Sealed proposals will be received here until 10 a.m., July 10, 1922, for construction of boiler house and heating system. Deposit $15 required to insure return of plans and specifications. Further information on application.

U. S. ENGINEER OFFICE, Buffalo, N. Y. Sealed proposals will be received here until 11 a.m. (Standard Time), July 17, 1922, and then opened, for constructing rubble mound extension of west breakwater, Ashtabula Harbor, O. Further information on application.

U. S. ENGINEER OFFICE, P. O. Box 72, Louisville, Ky. Sealed proposals will be received here until 2 p.m., Central Time, July 17, 1922, and then opened, for furnishing and delivering Metal Work for Navigable Pass for Dam No. 44, Ohio River. Further information on application.

U. S. ENGINEER OFFICE, 250 Old Land Office Building, Washington, D. C. Sealed proposals will be received here until 12 m., July 17, 1922, and then opened for the construction of item a; item b, section No. 1; item b, section No. 2; and item c of Division No. 1; Division No. 2; and Division No. 3, of the water supply conduit for the District of Columbia. Further information on application.

U. S. ENGINEER OFFICE, P. O. Box 72, Louisville, Ky. Sealed proposals will be received here until 2 p.m., Central Time, July 18, 1922, and then opened for furnishing and delivering steel sheet piling for Dam No. 44, Ohio River. Further information on application.

PROPOSALS FOR 4 DIESEL ELECTRIC SEAGOING HOPPER DREDGES—Office, Chief of Engineers, Room 2802, Munitions Bldg., Washington, D. C. Sealed proposals will be received here until 12 o'clock noon, August 2, 1922, and then opened for the construction of 4 Diesel Electric Seagoing Hopper Dredges. Further information on application.

POSITIONS VACANT

A LARGE structural company has openings in its drawing room for several checkers and detailers; give full experience in applying. P-555 Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

COMPANY in Toronto, Canada, controlling several utilities in foreign countries, seeks experienced electrical designing draftsman familiar with making plans for large indoor and outdoor stations to take charge of drafting force. Please give full experience record, salary expected and time when free to begin. P-583, Eng. News-Record.

DRAFTSMEN, several, experienced, structural beam and column detailers for apartment and loft buildings; New York City; state age, nationality, experience and salary expected. P-467, Eng. News-Record.

DRAFTSMEN, detailers and checkers on shop detailing for structural steel. Morava Construction Co., 85th and Stewart Ave., Chicago, Ill.

ENGINEER wanted; capable technical man wanted to take off all kinds structural and reinforcing steel and miscellaneous items from plans and make shop details. Must be experienced. Address W. G. Thomas, Pres. Pidgeon-Thomas Iron Co., Memphis, Tenn.

ENGINEER or surveyor familiar with coordinate system of computations on subdivision work and who can make neat tracing wanted, one who has had experience and able to furnish good references; permanent position. John M. Farley, White Plains, N. Y.

ESTIMATORS—Engineering News-Record would like to get in touch with several quantity estimators in New York competent to make an analysis of materials in building and other construction work. High grade service is involved calling for broad experience and vision. The work will require only a small amount of time but will extend over one or two months. Kindly write to A. W. Welch, 10th Ave. at 36th St., New York.

POSITIONS VACANT

ESTABLISHED engineering and construction firm capitalized at $50,000.00, doing $200,000.00 business annually at 10% net margin, desires services of two young engineers. One for re-inforced concrete designing and estimating, the other on irrigation and drainage work. Territory covers Southwest Texas and Mexico. Tremendous future in this particular territory. Each must take one fifth interest in the firm, $10,000.00 investment required. An unusual opportunity for young college man who wants to grow with the firm. Write to manager Blue Flag Industries, San Antonio, Texas.

GOING concern in Cheboygan, Mich., desires to interest capable man familiar with structural sheet metal and bridge construction work. Must have technical experience and able to produce results. Someone with capital to take interest in business preferred. P-268, Eng. News-Record, Leader-News Bldg., Cleveland, O.

SEVERAL structural steel draftsmen wanted. Apply Hay Foundry and Iron Works, Newark, N. J.

Several Experienced

Structural Steel Draftsmen

for detailing and checking. Give experience, salary expected and when you can report for work.

Lackawanna Bridge Works Corp.
Box 991, Buffalo, N. Y.

POSITIONS VACANT

MAN wanted to teach structural engineering in an Eastern college; teaching and practical engineering experience preferred. Address, with full particulars concerning education, experience and salary desired. P-547, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

STRUCTURAL steel draftsman and checkers with experience in bridge and structural work. State age, experience, nationality and salary expected. Permanent positions for experienced men. Anthracite Bridge Company, Scranton, Pa.

STRUCTURAL concrete designer and detailer, having some experience in designing and detailing on reinforced concrete buildings, to prepare working plans, bar lists and bending details. Preference given to young technical graduate. State age, experience, references and salary expected. P-515, Eng. News-Record.

STRUCTURAL engineer wanted by large manufacturing concern. Applicant must be experienced in designing, checking and estimating reinforced concrete structures of all types. Excellent opportunity for advancement to the man who can make good. Apply by letter stating age, whether married or single, education, experience in detail, salary expected, and when you can report if employed. P-598, Eng. News-Record.

WANTED—Engineer and draughtsman, familiar with the design of street and sewer castings to design complete line of manhole frames and covers, sewer inlets, gratings, catch basins, etc. P-473, Eng. News-Record, Leader News Bldg., Cleveland, O.

WANTED: A man to serve as resident engineer on a sewer job in a town of 3,000 in Indiana or Arkansas. Give in handwriting experience, education, references, age and sample drawing if convenient. Address Consulting Engineer, 924 Chemical Bldg., St. Louis, Mo.

WANTED — First-class detailers and checkers of structural steel for buildings and bridges. Virginia Bridge & Iron Co., Roanoke, Va.

SEARCHLIGHT SECTION

EMPLOYMENT—BUSINESS OPPORTUNITIES

Positions Wanted, 4 cents a word, minimum charge 75 cents an insertion.
Positions Vacant and all other classifications, 8 cents a word, minimum $2.

Box Numbers in care of any of our offices count as 5 words in addition to advertising copy.

Replies are forwarded each day as received at all of our offices without additional charge.

Discount of 10% is allowed if one payment is made in advance for 4 consecutive insertions.

THE ABOVE RATES ARE FOR ADVERTISEMENTS SET UNDISPLAYED. FOR DISPLAY RATES SEE "EQUIPMENT" HEADING.

E. N. R.

EMPLOYMENT AGENCIES

GENERAL ENGINEERING AGENCY, Pittsburgh, serving employers everywhere overnight, gratis, requires executives and assistants, plant engineers, machinery and structural designers, checkers, detailers, architectural, industrial, municipal, railway engineers, draftsmen, transitmen, advertising, sales, appraisal engineers-accountants, instructors, professors. Service commission 2½%.

EMPLOYMENT SERVICE

A LEADING organization desiring to fill an important position, for obvious ethical and other reasons, cannot invite directly the candidacy of any particular man. Similarly, no well-connected man will exploit personally his own qualifications, no matter how receptive he may be to overtures. The undersigned has been retained by a national clientele for many years, as a medium for negotiating preliminaries in such cases. Your permission to send booklet discussing this problem and describing the service, will in no degree obligate or compromise you. Strictly confidential. R. W. Bixby, Inc., 304 Lockwood Building, Buffalo, N. Y.

PROFESSORS, assistant professors and instructors of technical and engineering subjects wanted immediately for colleges and universities. Write fully; no advance charges. Educators' Department, H. H. Harrison & Co., Employment Service, 19 S. La Salle St., Chicago, Ill.

EXECUTIVES

Engineers and men of proven ability seeking positions, find our service extremely satisfactory. Our Mr. H. H. Harrison can confidentially negotiate for you suitable connections, as he has successfully done for thousands of others since 1909. Inquiries invited.

The National Business Bourse, Inc.
Confidential Negotiators
Association Bldg., Chicago

POSITIONS WANTED

Civil Engineers

CIVIL engineer, Cornell graduate, seven years' varied practical experience, railroad, industrial construction, design, highways; now employed as resident engineer on highway work in Ohio Valley, Miss. Salary $225 per month. PW-508, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

CIVIL engineer, technical education, 34, 12 years' experience, townsite and industrial plant layout and construction, railway construction, irrigation and highway engineering, plane table topography. C. J., 208 N. Myers St., Charlotte, N. C.

CIVIL engineer and draftsman, age 32, married, 12 years' experience canal, highway and municipal engineering, hydrographic, topographic, city and general surveying, capable of handling field parties, neat, accurate and conscientious, desires permanent position in Eastern states; best of references; salary $160. PW-553, Eng. News-Record.

CIVIL engineer, graduate, age 27; 5 years' experience highway engineering and concrete construction and design; available at once. PW-548, Eng. News-Record.

CIVIL engineer; 12 years' railroad highway and building experience; university graduate; report immediately. Wire or write P. O. Box 228, Elkhart, Ind.

CIVIL engineer, 18 years' experience in design and construction of large works, will consider teaching mathematics, mechanics, hydraulics, or physics. PW-570, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

CIVIL engineer and surveyor, American, single, technical graduate, age 37; broad experience, embracing industrial plants, docks, sewers and foundations; go anywhere. Dell, 1739 Montgomery Ave., New York, N. Y.

POSITIONS WANTED

CIVIL engineer, 28, single, graduate, 5 years' experience estimating, cost engineering, design and construction of reinforced concrete and steel structures, good building experience, employed, desires responsible position with contractor in New York City or Washington, D. C. PW-605, Eng. News-Record.

CIVIL engineer, 37; 14 years' experience, partly as contracting engineer; 4 years roads and paving; desires responsible connection, good on municipal work preferred. PW-606, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

CIVIL engineer with 10 years' experience in harbor construction, who can take charge from beginning of plans to completion in the field, seeks new connection in his specialty of port improvements, dredging, pier and warehouse construction and repair. PW-610, Eng. News-Record.

CIVIL engineer, capable and experienced in railroad work as locating engineer or chief of party. Fifteen years in the tropics. Speaks, reads and writes Spanish. Familiar with sugar mill construction. Will accept position anywhere South America preferred. PW-588, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

CIVIL engineer, graduate, 14 years' broad experience, design and construction, docks, sewers, subways, power and industrial plants, hydro-electric developments. PW-573, Eng. News-Record.

CIVIL engineer of fifteen years' experience, wants position as city or county engineer. Have always made good. RWJ, Box 204, Rutherfordton, N. C.

Draftsmen and Designers

REINFORCED concrete and structural steel designer, experienced, oil refineries, power plants, gas plants, buildings. PW-586, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

Estimators

BUILDERS' estimator, civil engineer, 25 years' experience, quantities and prices all trades, superintends, for maximum economy, every detail from soliciting to completion of contracts. PW-597, Eng. News-Record.

HIGHER ENGINEERING

(BY MAIL)

The EDUCATION that fills the mind and purse is acquired AFTER school or college days are over. EXPERIENCE is the most precious part of an education and the sources from which it is collected must be reliable, otherwise we get the brand that gives us no confidence.

WILSON COURSES in Engineering give the sort of information and confidences that enables men to branch out into this field in a manner that spells success from the start. Thorough knowledge of your subject banishes fear, and gets you the big job.

Literature is free; send for it.

Reinforced Concrete Design and Estimating.
Structural Steel Designing and Estimating.
Structural Drafting and Steel Design (Combined)
Concrete Drafting and Estimating
Structural Engineering (1 and 2 above)
Bridges (Steel and Concrete)

Enroll any time. Educational requirements: Technical education, High School mathematics or their equivalent.

WILSON ENGINEERING CORPORATION
10 Broadway, Hanover, Mass.

Construction Men

Learn "Line" and "Grade" by Actual Practice.

Level, Transit, and Plane Table Work.
"Running" of Farm, Stadia, Highway and Railroad Surveys.

Estimating

Day and evening courses. Booklet.

The Pan-American Engineering Society
39 West 17th St., New York City

POSITIONS WANTED

Mechanical

MECHANICAL engineer and superintendent, experienced in cement plants, material handling and general plant design and construction. PW-472, Eng. News-Record.

MECHANICAL engineer, 12 years' experience in factory equipment, layout installation and maintenance, familiar with boiler economy, power generation and distribution in large manufacturing plants. PW-490, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

MECHANICAL and structural tracer, 6 years' experience, some experience detailing, and student of engineering course by mail, desires permanent position with chance for advancement. Can also take charge of tracing department. PW-591, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

MECHANICAL engineer, 26, M. I. T. 1922. Three years' government experience drafting and designing, 1918-1921. Would like opportunity to start in hydroelectric development, construction work or plant maintenance. PW-593, Eng. News-Record.

Structural

STRUCTURAL engineer, graduate, 20 years' experience with bridge and railroad companies, detailing, designing, estimating, desires position. PW-478, Eng. News-Record.

STRUCTURAL and concrete steel designing draughtsman, ten years' excellent experience, technical graduate, wants position. PW-601, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

Surveying

INSTRUMENTMAN and draftsman, age 32, married, ten years' experience on all classes of surveys, desires position, preferably n eastern states. PW-592, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

Superintendents

BUILDING construction superintendent desires connection with a first class firm. Advertiser has 20 years' experience on all kinds of buildings and types of construction; can handle either field or office; am at present employed, require two weeks to make change. PW-458, Eng. News-Record.

BUILDING construction superintendent, 20 years' experience on all kinds of buildings and type of construction; married. At present employed, desires connection with a first class firm. Can handle either field or office. Require two weeks to make change. Go anywhere in U. S. PW-611, Eng. News-Record.

BUILDING superintendent, 15 years' practical experience in all kinds of building construction. Salary reasonable. PW-585, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

CONCRETE road superintendent, age 38, married; at present in Southeastern state; 16 years on heavy construction roads, dams, power plants, railroads; available thirty days' notice; salary or salary and bonus. PW-546, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

CONSTRUCTION superintendent, 16 years broad experience, embracing industrial buildings, apartments, office buildings, hotels and general construction. Good executive, familiar with buying and costs. Location immaterial. Salary commensurate with results. Good reasons for desiring to make change. PW-524, Eng. News-Record, Leader-News Bldg., Cleveland, O.

CONSTRUCTION superintendent or foreman. Desires connection. Experienced on design and erection of power plant, gas plant, oil refineries. PW-587, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

ENGINEER-Superintendent, age 34, technical education, 13 years' experience, highway, railroad, street and bridge construction, in charge either as engineer or superintendent, now employed as engineer in southern state. Desire permanent position with consulting engineer, contractor or industrial plant in Wilmington, Baltimore, Washington, Richmond or Norfolk section. Scotch by birth; hustler. PW-596, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

EXPERT superintendent, estimator, organizer and pusher on roads, sewers, railways and heavy excavation. Superintendent, 2508 Maryland Ave., Baltimore, Md.

GENERAL superintendent; long experience in all kinds of building construction. Salary, $5,500. PW-569, Eng. News-Record.

SCHOOL construction superintendent. Any architect requiring an experienced man with good references address PW-289, Eng. News-Record.

SUPERINTENDENT on road construction, age 29; ten years' experience; certified member American Association of Engineers; formerly engaged as resident engineer with State highway commission in charge of the construction of bituminous, macadam, bituminous concrete, sheet asphalt and concrete roads and streets; now employed as timekeepeer and material man with large road contractor. Salary $200 and expenses. Available on one week's notice. Will call for interview within 200 miles of Philadelphia. PW-465, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

SUPERINTENDENT or foreman, 18 years on waterworks construction work; understands all classes of pipe, heavy rock excavating. A1 mechanic, steam, electrical, and gas pumps. A1 references. PW-513, Eng. News-Record.

SUPERINTENDENT of construction will be open for position Aug. 15th; wide experience in all types of reinforced concrete construction, office buildings and school work; can furnish complete organization; references from leading contractors in country. PW-560, Eng. News-Record, Leader-News Bldg., Cleveland, O.

SUPERINTENDENT highway construction, experienced in all kinds of road-building, steam-shovel, quarry, heavy pipe-line and trolley work. Successful in handling large jobs and forces of men. PW-578, Eng. News-Record.

SUPERINTENDENT; 17 years' experience in full charge; best references. PW-574, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

SUPERINTENDENT or general foreman of structural steel work, shop or erection, 19 years of experience; am well qualified, a hustler, 35 years old. Also willing to invest some money in a growing concern. Williamson, P. O. Box 302, Laundale, Ohio.

SUPERINTENDENT, road construction, age 30; nine years' experience; former resident engineer with State highway department in charge of construction. Available immediately. PW-607, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

SUPERINTENDENT, 35, technical, buildings, bridges, railroads and structures, masonry, earthwork, surveys. Open for reasonable offer, any capacity with reputable company. PW-590, Eng. News-Record.

SUPERINTENDENT or carpenter foreman, 15 years' practical experience in building construction; pile driving; coffer dams; excavations, foundations; reinforced concrete, etc. PW-613, Eng. News-Record.

SUPERINTENDENT'S assistant, 29, technical graduate, 7 years' general construction. New York or vicinity. Highest credentials. Available on 2 weeks' notice. PW-612, Eng. News-Record.

WANTED—A position as general superintendent on either highway or city paving work. Thoroughly experienced and at present employed. PW-498, Eng. News-Record.

Miscellaneous

ARCHITECTURAL engineering graduate M. I. T. 1922. Specialized in reinforced concrete design. Desires position with a reputable concern. Broader experience than the average graduate; married, 25 years of age. Would consider sales proposition in some line connected with the building industry. Available immediately. Francis Geo. Davidson, 30 Medfield St., Boston, Mass.

ASSISTANT engineer, experienced on highway construction, municipal work, concrete, surveys. Registered engineer. Ready immediately. PW-602, Eng. News-Record.

C. C. N. Y. student in building construction, seeks on opening in construction. Location immaterial. PW-582, Eng. News-Record.

CONSTRUCTION manager and general superintendent; broad experience in general building construction. Experienced estimator-solicitor and purchaser, familiar with phases of contracts. PW-559, Eng. News-Record, Leader-News Bldg., Cleveland, O.

CONSTRUCTION engineer and job manager, 12 years' experience in railroad, oil field and refinery construction; speaks Spanish and is experienced in handling Latin-American labor. PW-497, Eng. News-Record.

CONSTRUCTION engineer, general industrial plants in their entirety, both mechanical and structural. 18 years' experience, available two weeks. PW-603, Eng. News-Record, Real Estate Trust Bldg., Phila., Pa.

CONTRACTING engineer, aged 44, married, with 20-year experience in building construction; thorough knowledge of costs, estimating, securing of contracts, purchasing and general superintending; industrial construction New England district preferred. PW-543, Eng. News-Record.

ENGINEER, 19 years' varied experience design, construction and improvement work largely with chemical industries, desires to establish connection having prospects for permanence with growing manufacturing concern or with consulting engineers; highest references. PW-558, Eng. News-Record, Leader-News Bldg., Cleveland, O.

ENGINEER, technical graduate, wide experience in design, construction and maintenance of steam electric power plants and industrial works, investigations, efficiency engineering, test and report work; location no object. PW-576, Eng. News-Record.

V. Cioffi & Son

Skilled and unskilled laborers supplied in short notice. Commissaries Keepers.

153 Bowery, New York City

The Erie Employment & Supply Co.

8701 Union Ave., Cleveland, Ohio

Boarding Camps, and Commissaries, operated for Railroads, Manufacturers, Contractors, Coal Mines, etc. We furnish laborers, mechanics and all classes of skilled help. Employment offices at Cleveland, O., Cincinnati, O., Toledo, O., Columbus, O., St. Louis, Mo., Indianapolis, Ind., Chicago, Ill., Danville, Ill., and Buffalo, N. Y.

POSITIONS WANTED

GENERAL construction superintendent and estimator desires connection with first class firm. Advertiser has 20 years of practical and theoretical experience on all types of construction. Am employed at present, require one month to change. PW-609, Eng. News-Record.

GENERAL foreman (Italian), hustler, not afraid to work; 20 years' experience on first-class work, sewers, waterworks, tunnels and foundation a specialty. PW-614, Eng. News-Record.

OVER twenty years' practical experience dam building, marked ability building heavy timber cofferdams for all purposes, handling difficult rivers; quick or still water, experienced diver; thoroughly understands handling water, all riggery and heavy equipment, good organizer; large followings; like connections with difficult work. PW-408, Eng. News-Record.

INSPECTING engineer, 28, technical graduate 1916, single, recently connected with engineering concern directing charge inspectors, traveling representative interviewing officials various fabricating (steel) and manufacturing plants throughout the eastern and central states regarding clients contracts for materials, machinery and equipment, smoothing out discrepancies in design between sub-contractors on construction previous to fabrication, passing inspection, running tests, in strict accordance with the specifications and expediting shipment of same. Exceptional references. Location immaterial. F. W. F., 635 75th St., Brooklyn, N. Y.

EXTRA WORK WANTED

ENGINEER desires extra work; surveys, map drafting, computations; evenings, Saturdays and Sundays, full time August and September. EWW-549, Eng. News-Record.

STRUCTURAL steel designing, detailing, checking by graduate engineer. J. P., Room 206, 147 East 125th St., New York City.

TUTORING

CIVIL engineer teaches arithmetic, algebra, geometry trigonometry, draughting, mechanical, structural, surveying, building construction; prepares engineering positions. Mondell, 50 E. 42d St., N. Y.

PROFITABLE practical individual instruction engineering and drafting by competent practising engineer and ex-chief draftsman. T-564, Eng. News-Record.

SALESMEN AVAILABLE

SALESMAN; machinery experience. References; age 35. SA-595, Eng. News-Record.

AGENTS AND SALESMEN

Resident Salesmen

Towns 10,000 and up, sewer, road material, or contracting experience, to close municipalities on patented storm sewer equipment. Liberal commission. Sanitary Catch Basin Company, Indianapolis, Ind.

Sales Engineer

Wanted to represent nationally known manufacturer of standardized material handling machines, conveyors and loaders, in Western New York State Territory. Equipment has wide application in both industrial and construction fields and especially road building. Prefer individuals who are at present handling few established non-competing lines. Commission basis. AS-589, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

CONCRETE MIXERS AND CONTRACTORS' EQUIPMENT

Sales engineers with showroom and fully equipped repair plant will consider representing manufacturers for New York and Eastern territory. Excellent references and credit. Now acting as sole agents for hoist manufacturer. Salesmen and engineers of ten years' experience.

WUNSCH & terKUILE,
302 McDougal St., Brooklyn, N. Y.

WANTED

Responsible Agency to Handle

ATLAS Mixers, Etc.

in Indiana, also agency wanted in Minnesota and North and South Dakota.

ATLAS ENGINEERING CO.
Milwaukee, Wisconsin.

Agencies Wanted for

SOUTH AMERICA

A firm of importers and engineers located in Rio de Janeiro, with branches in Buenos Aires and Montevideo, and agents in all principal cities, desires to enter into negotiations with American concerns.

Specializing in all kinds of Machinery and Construction Material.

Willing to take on representations for all South America.

ATLANTICA LTDA

Avenida Rio Branco, 9, Rio de Janeiro

REPRESENTATION AVAILABLE

Building Material Sales Organization

With established headquarters in New York and representatives in various parts of the East is open for a proposition. Do you manufacture building materials or equipment for which sales representation or agency is desired? RA-600, Eng. News-Record.

AGENCIES WANTED

Boston Dealer

In structural iron and steel wants Boston or New England territory agency for manufacturers of any kind of material used in building construction. Accustomed to taking quantities direct from plans and contract for the same. Many years' experience. AW-599, Eng. News-Record.

WORK WANTED

Structural Designing

Detailing and checking, tonnage or cost-plus basis. WW-608, Eng. News-Record, Leader-News Bldg., Cleveland, O.

PATENT ATTORNEYS

PATENTS—Send for form "Evidence of Conception" to be signed and witnessed. Form fee schedule, information, free. Lancaster and Allwine, 262 Ouray Bldg., Washington, D. C.

BOOKS AND PERIODICALS

Back Issues for Sale

Engineering News and Engineering Record, 1885 to 1921, inc.; Journal Association Engineering Societies, 1898 to 1913, inc. B&P-561, Eng. News-Record.

OFFICE SPACE FOR RENT

Wanted—Engineer

To share architect's office. Splendid light, complete services. Suite 1211, 105 West 40th St., New York City.

FOR SALE

Five Baker Maney Wheelers

For sale; all in good condition. Wm. D. Kelly, R. R. 4, Frankfort, Ind.

Scrapers and Tractor

3—1 yd. Baker-Maney self loading scrapers. 1—5 ton Holt tractor. Used less than 4 months. FS-447, Eng. News-Record.

Shovel and Cars at Sacrifice

Revolving shovel $3,000. Rental $325 mo. 9-24" gauge Koppel cars $45 each. 1,500 ft. 24" gauge industrial track 25 cts. ft. 1—1,200 yd. asphalt plant, R.R. type. All in first class condition. F. H. Tobias, 901 Ogden Ave., N. Y. City. Tel. Jerome 2313.

Transit

Keuffel & Esser Engineers Transit, $146.00; used only 90 days. Cost $211.00. Write for photograph and full description. FS-604, Eng. News-Record, Old Colony Bldg., Chicago, Ill.

WANTED

Wanted To Buy

One used ten to thirteen ton 3 wheel steam road roller with scarifier. State make, age, price in first letter. W-594, Eng. News-Record, Leader-News Bldg., Cleveland, O.

BUSINESS OPPORTUNITIES

Splendid Opportunity

For a responsible firm to manufacture and place in Canada a patented concrete road finishing machine universally used in United States. In replying send references. Macon Concrete Roller Company, Macon, Ga.

Structural Draftsmen

Designing, Detailing, Plan Making

Complete squad of 8 men ready to turn out work in shortest possible time at lowest rates. Estimates gladly submitted.

W.W.—581 Eng. News-Record
10th Ave., at 36th St., New York City

BUSINESS OPPORTUNITIES

Foreign Representative

Civil engineer going abroad will negotiate representation, act as agent or make business survey. BO-584, Eng. News-Record.

Limestone Quarry For Sale

Located on Huntingdon and Broad Top Mountain R.R., with siding facilities and easy trucking distance to State Highway. Quarry contains fluxing stone for furnace purposes, as well as ballast for railroad and State Highway. Orders on books sufficient to operate for balance of the year. Plant is in full operation and fully equipped. Paying proposition. Can be seen and investigated by calling on Warrior Lime & Stone Co., 401 Penn St., Huntingdon, Pa.

MISCELLANEOUS

Contracts Wanted

For steam shovel work. Have two type "B" high lift Erie shovels, with caterpillar traction. Will rent or contract. Washburne Engineering Co., Locust Valley, L. I.

Contracts Wanted

General contractors for United States and Latin America; purchasing agents for materials and machinery. Marck Engineering and Contracting Co., 373 Fulton St., Brooklyn, N. Y.

Trench Work Wanted

Have Austin trenching machine practically new. Will rent or take contracts. Washburne Engineering Co., Locust Valley, L. I.

ENGLISH FACTORY AVAILABLE

Works, Manchester, England. Area approximately 9000 sq. ft. on one floor. Capable of additional floor of 5000 sq. ft. Five minutes trolley or twelve minutes walk center of Manchester. Free rail delivery area, easy access ship canal. Suit motor garage or engineering and combining workshop and showroom. Rental £750 per annum. Apply

T. J. BENJAMIN, Solicitor
60 Castle Street, Liverpool, England.

FOR SALE

QUARRY

The finest Quarry property in eastern Pennsylvania. Established in 1780. Will divide or lease on Royalty.

C. I. LEIPER, Swarthmore, Pa.

A CHANCE TO BUY A MACHINE BUSINESS

A new labor-saving machine, used by builders, contractors and others, has been successfully introduced in the Eastern city where it was developed. The machines cost less than $300 to build and the owners have leased them to contractors at $25 to $40 per week. It is the only successful machine in its field.

The owners offer this business for sale to a purchaser able to market these machines on a country-wide scale. A manufacturer or a sales organization reaching building contractors can add this to its line with great profit. An individual with the requisite sales experience, ability and moderate capital may find here the opportunity to engage in a profitable business on his own account.

The Engineering Business Exchange
30 Church St., New York City

1922 Edition

READY FOR DELIVERY JULY 15

New Building Estimators' Handbook

By William Arthur

Over 1000 pages, 4½ x 7. Many tables and illustrations—Flexible Keratol $6.00.

DO YOU prepare your estimates from information based on actual, present-day conditions? Don't stake your profits on guesswork—let this new guide book eliminate the possibility of any loss.

This 1922 Edition has been brought sharply up-to-date to give actual time, labor and material required on every operation in all classes of work. The first printing will be ready June 30. At that time we will send you this 1922 *ESTIMATOR* for 5 days' FREE EXAMINATION if you return the coupon now. Send no money, just the coupon.

U. P. C. Book Company, Inc.
243 W. 39th Street, New York

Send me as soon as published Arthur's NEW BUILDING ESTIMATORS' HANDBOOK for 5 days' FREE EXAMINATION.

I will either return the book to you at the end of 5 days or remit its cost of $6.00.

Name .....

Address .....

E. N.-R. Subscriber 6-29-22

Bids July 28.

Light Plant Machinery For Sale

Homestead, Fla.

Sealed proposals will be received by the Mayor and Town Council, Homestead, Fla., on or before 8 p. m. Friday, July 28, 1922, and then publicly opened for, two complete electrical units, as follows:

Unit 1—1 De La Vergne Engine, Type D, H. oil, 225 r.p.m., 60 B.H.P., Westinghouse Generator, 40 kva., 3 ph., 60 cy., A.C., with switchboard and all accessories.

Unit 2—Fairbanks-Morse Type O, 75 kva., 257 r.p.m., 3 ph., 60 cy., A.C., 2300 v., Fairbanks-Morse Engine 100 hp., style V., 257 r.p.m., with switchboard and all accessories.

Each proposal must be accompanied by a certified check for 2 per cent of the amount of the bid, made payable to the City Clerk, R. E. Edwards, Town of Homestead, Florida, as evidence of good faith.

Specifications, forms of proposals, and general plan may be obtained from the engineer's office, Homestead, Florida.

The right is reserved to reject any or all bids.

S. E. LIVINGSTON, Mayor.
R. E. EDWARDS, Clerk.

B. M. Duncan, Engineer,
Town of Homestead.

NEW AND USED SURVEYING INSTRUMENTS AT FACTORY PRICES

Satisfaction guaranteed or money refunded. Write for complete list and catalogue of our high grade instruments and supplies for civil engineers, surveyors, mining, builders, contractors, etc.; 40 years' experience in repairing instruments of all makes at reasonable prices. Prompt service.

WISSLER INSTRUMENT CO.
607 N. Broadway, St. Louis, Mo.

Second-Hand Transits and Levels

Guaranteed in Good Order and Adjustment
Write for New Bargain List
WILLIAMS, BROWN & EARLE, INC.
918 Chestnut St., Philadelphia, Pa.
Department D

ATTENTION, ENGINEERS AND BRIDGE CONTRACTORS

Mail us check or money order for $5.00 and we will mail you complete set of BRIDGE DESIGNS AND SCHEDULES giving SCALE WEIGHTS on approximately 400 steel bridges, with 12 to 18 ft. roadways, wood and concrete floors. All engineers and bridge contractors should have one. Guaranteed or money returned.

SOUTHWESTERN ENGINEERING CO.
Box 865, Oklahoma City

Steam Shovel for Rent

¾-yd. Thew Shovel in fine condition.
Located at Corning, N. Y.

JAS. S. BRADEN, 30 Church St., N. Y.

EXCAVATION

Steam Shovels for rent with crews or work taken by contract.
Dinkeys and cars or teams furnished.

H. C. AMBLER
3717 Old York Road, Philadelphia, Pa.

FOR RENT AND SALE

STEAM SHOVEL

Traction ¾-yd. THEW shipper shaft type, in fine condition, for a rental proposition. Traction ¾-yd. THEW steam shovel, combination boom, for sale.

HENRY A. OTTO
Woolworth Bldg., Lancaster, Pennsylvania

Buy from the Largest Dealers in the United States

SELECT FROM A $2,000,000 STOCK OF GOVERNMENT MERCHANDISE

Needed Supplies in Army Goods

No. 1704. Gov't Feed Bags — Extra heavy canvas, heavy leather bottom, 60-in. adjustable head st p. Price per dozen, $3.00. Cases of 50 bags, $2.70 per doz.

No. 1816. Government Bunks— Real Tiger double deck bunks. All steel. Gov't cost between $10 and $15. In perfect condition. Price, each, $4.50

No. 1817. Government Liberty Steel CotsCollapsible, new. Painted either gray or black. 2 ft. 6 in. by 6 ft. 4 in. Price each, $1.75

No. 1818. Gov't new folding Canvas Cots — Covered with 30-ounce waterproof khaki Duck — on a hardwood frame. Price, per doz., $32.50

No. 154. Gov't Water Buckets— Collapsible, extra heavy, leak-proof canvas. 40 to a case. Price, doz., $3.60

No. 1702. Gov't Waterproof Duck —No. 6, thought to be 30-oz. wt., khaki color. Comes in 150 yard bolts. Price F.O.B. Louisville, Ky., or Chicago, per yard 27½c. Less than bolt lots, 35c

No. 1509. Gov't Sibley Stoves— New. Burn wood. Wonderful heaters. Conical shape. Price each, $1.00.

No. 1810. Gov't Overalls and Jumpers — Brand new in original government bales of 50. No. 220 Denim Overalls bibless, loops for belts and buttons. Sizes up to 44. Jumpers buttoned or slip-over Dungaree style; sizes up to 50. Prices, per dozen, Overalls $6.50; Jumpers $6.00

No. 571. Gov't Roasters—heaviest black iron, Bakers, Roasters or Drip Pans. Extra strong and reinforced. Sizes 30x23, 27x24, 21x21, 24x16, 22x11, 21x10. Prices, any size, per dozen, $3.00

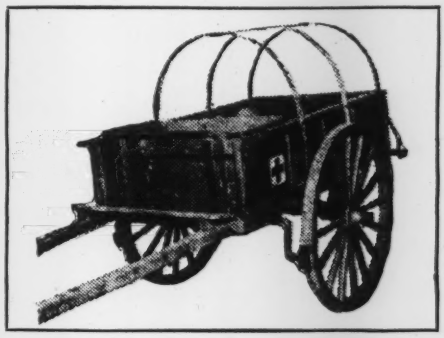
No. 811. Gov't Stencil Outfits— 1 set of 1-in. alphabets, 1 set of 1-in. figures, 1 set of 1½-in. alphabets, 1 set of 1½-in. figures, 1 can marking paste, 1 marking brush—all in wooden cabinet. Price complete, $1.00

No. 807. Gov't Stencils—30 pieces —brass, alphabets. Price per set, 35c

No. 805. Gov't Stencils—12 pieces —brass figures 1 in. long. Price per set, 20c

No. 1900. Gov't Hip Boots—First quality rubber. Sizes 7 to 11. One dozen pairs to case of a size. Price by the case, per pair, $2.25. 10 dozen lots, 2 dozen of each size, per pair, $2,00.

No. 84. Gov't Castile Soap—Genuine imported white. In 4-lb. bars, 18 bars, or 72 lbs. to the case. Price per bar, 60c. Per case, $9.00



No. 1701. Gov't Carts or Trailers— New. Strongest ingenuity could produce. Every conceivable reinforcement. The box is 8 ft. long, 4 ft. wide, 21 in. deep, about 1¾ in. thick. Wheels iron covered and about 3 in. thick; 60-in. diam. with 16 massive, solid spokes, 3 stakes for canvas cover. Shafts, chain tugs, seat, footboard, back chain and poles, etc. Best trailer money can buy. Gov't cost about $200.00. Immediate shipments, Price F. O. B. Hawthorne, Ill., [Chicago suburb], $25.00.

No. 158. Gov't Pyramidal Tents— Standard 12 and 16 ounce duck, Army tents. 16 ft. by 16 ft., 3 foot high side wall. 11 ft. high at center. White or khaki. Reclaimed but guaranteed perfect. Poles not included. Price, $14.

No. 1700. Gov't Tarpaulins—Genuine government 30-ounce waterproof duck. Heaviest mfd. Any size up to 150 x150 ft. Sizes below always in stock.

8 ft. x 10 ft. 6 in.	$ 5.60
10 ft. 6 in. x 12 ft.	8.40
10 ft. x 15 ft.	10.50
12 ft. x 14 ft.	12.25
14 ft. x 16 ft.	16.80
16 ft. x 20 ft.	22.40
20 ft. x 40 ft.	56.00

Any other size you desire at 7c per sq. ft.

Other Army Goods Values

Government Huck Towels — All brand new—bleached, 16x33. No. 884, per doz., $1.25. Bleached linen finish, hemmed ends, 17½x36. No. 77, per doz., $1.37½. Same quality but extra heavy, 17 x 33. No. Memphis, per doz., $1.50. Heavy bleached, 17x35, No. 537, per doz., $1.40. Soft finished hemmed, bleached, 17½ x 35, No. Griffin, per doz., $1.15. Extra heavy bleached, hemmed, 17 x 38, No. 1634, per doz., $1.30. New line. Price per doz. for 11 bales of each number, 6 doz. to bale, $1.08 F. O. B. Atlanta, Ga.

No. 156—Gov't Ponchos — Rubberized, waterproof. Reclaimed but perfect. 50 to bale. In bale lots, price each, 75c. Less than bale lots, 85c.

No. 99. Gov't Slickers—Brand new black raincoats, full length, sizes to 46, $1.75

No. 413. Gov't Mattress Covers— Brand new. Extra heavy twill muslin. In doz. lots, price each, 40c.

No. 1710. Gov't Pup Tents — Heavy khaki, waterproof. Complete with poles, each, new, $1.75. Same tent, not new but good condition, 90c.

No. 1711. Gov't Pup-Tent Poles —New. Best quality. Packed 720 to case.

Price per dozen	60c
Price each by the case	3½c
Price each in lots of 2,500	2½c
Price each in lots of 10,000	1¼c
Price each by the carload	1½c

No. 1981. Gov't. Mess Kits—Army style. Reclaimed. Aluminum meat cans, cover and handle. Per doz., $1.20.

No. 1902—Gov't Finest Black Chrome Leather Navy Boots. 17 inches high. Sizes 7 to 12. Per pair, $3.00.

No. 152 — Gov't Class B. Khaki Breeches, per doz., $4.50.

No. 1812. Gov't Navy Wool Underwear. Medium weight, over 75% pure wool. Shirts sizes 36, 40, 42, 44. Drawers 34, 36, 38, 40. Shirts $6 per doz., drawers, $5.50.

No. 1952. Gov't Heavy Wool Sox. 25 dozen to bale. Gray, white or blue. Dozen, $1.80.

No. 1963. Gov't Reclaimed Aluminum canteens, per dozen, $1.50.

No. 567. Gov't Heavy Duck Pistol Belts, per dozen, 90c.

No. 1814. Gov't Rainproof, Windproof suits, coat, hood and trousers, fastening snug at wrists, ankles, waist and throat, $1.75 per suit in cartons of 2 small, 6 medium and 3 large suits. $3 each in smaller lots.

No. 1924 — Gov't Leggings and breeches laces, toughest produced. Good for high lace shoes and boots. Leggings laces, 10 gross per pack, $1.00 per gross. Breeches laces; 5 gross per pack, $3.72, per gross.

No. 439—Gov't all leather blanket roll straps. Reclaimed but perfect. Per doz. 60c

GALLANT MERCANTILE COMPANY

111 South Market Street
Chicago, Illinois, U. S. A.

TERMS: Strictly net cash— no dating—no discount—merchandise returnable if not satisfactory.

All prices F. O. B. Chicago Unless otherwise stated

References Foreman Bros. Banking Co., Chicago, or any Mercantile Agency

ORDER BY NUMBER AS WELL AS BY NAME

SEARCHLIGHT SECTION

USED EQUIPMENT AND NEW

Offered for Re-sale

Space for these advertisements is sold by the advertising inch—30 inches to a page. The price per inch is based on total space used—multiply ad space by number of insertions.

RATE PER INCH:
1 to 3 inches.....$5.00 an inch
4 to 7 inches.....4.80 an inch
8 to 14 inches.....4.70 an inch

An inch is measured vertically on one column—three columns to a page. Any space may be used measured by the even inch in height by 1, 2, or 3 columns in width.

RATES FOR LARGER SPACES, OR SPACE ON A YEARLY BASIS, FURNISHED ON REQUEST.

E. N. R.

FOR RENT

PAVER

1—Four Bag Lakewood, boom and bucket. Complete with Batch Meter and Batch Transfer Derrick.
Good Condition. Available July 15th.

75—Four Bag Lakewood Batch Boxes.
122,000 ft. Lakewood Heavy Duty Track.
Available Immediately.

MICHAEL STAUB
Pitman, N. J.

WANTED AT ONCE

1—Locomotive crane caterpillar traction, full circle, revolving type; ¾ cu. yd. capacity.

1—100-ft. steel concrete tower, and metal chutes.

Address, A. PHELPS & SONS
Knoxville, Iowa.

WANTED

Steel Sheet Piling

For construction work in Central District. 1200 feet varying in length from 15 feet to 35 feet.

Sklanberg Construction Co.
First National Bank Bldg., Chicago, Ill.

Steel Sheet Piling

FOR RENT

Bought and Sold

J. R. WEMLINGER & CO., Inc.
149 Broadway, New York

Wanted—Pile Driver

Water Machine, second hand or new, scow about 25 x 50, hammer 3000 lb., leads 60 ft.

NEW YORK DOCK CO.
Joralemon and Furman Sts., Brooklyn, N. Y.

WANTED TO BUY

Cummer Iroquois or Warren 1250 yard

ROAD PLANT

Or would buy dryer only.
Box 1031 Amarillo, Texas

WANTED

PAN CONVEYOR

30 to 35 ft. long. Mail details and price.

STANDARD ELECTRIC MACHY. CO.
7 and 9 E. Hill St., Baltimore, Md.

WANTED

A Model 31 or Model 36 Marion Revolving Scraper Bucket **Excavator**, mounted on Caterpillar trucks.

The American Agricultural Chemical Co.
2 Rector Street, New York, N. Y.

WANTED

8 inch **Sand Dredging Pump** or Complete Outfit. Must stand investigation and be a bargain.

W-580, Engineering News-Record
1570 Old Colony Bldg., Chicago, Ill.

FOR SALE

CONTRACTOR'S MISCELLANEOUS EQUIPMENT

6—11 x 16 Vulcan Locomotives, 36-in. gauge.
80—4-yd. two way, 36-in. gauge Dump Cars, steel draft beam.
1—Double Truck, 36-in. gauge W. W. S. Spreader (New).
10—Double Trucks, 36-in. gauge Flat Cars 26 ft. to 30 ft. long.
2—No. 41 Marion Steam Shovels, No. 2266 and No. 2923.
1—No. 60 Marion Steam Shovel, No. 2382.
2—Steam Driven Ingersoll-Rand Compressors, Imperial Type 10, 1—888 ft. and 1—599 ft.
25—Ingersoll-Rand Tripod Drills, F-93.
1—28-in. x 8-ft. Planer.
1600 ft. ⅜-in. x 24-in. Pipe, lengths 15 ft. to 40 ft. (Lap weld).
2—Mattson Air Lock, Concrete Lock, shafting and medical lock.
100 tons 60-lb. Rails.
200—3-in. House Shoring Jacks.
1—Elevator for handling bagged cement.
1—Belt Conveyor for sand and gravel.
15—5-ton Pierce-Arrow Trucks.

RODGERS & HAGERTY
INCORPORATED
70 East 45th St., New York

LOCOMOTIVES

2—9 x 14 American Saddle Tank, 36-in. gauge, Hartford inspection 135 lb. (Bargain for quick removal.) Philadelphia location.

KEYSTONE GRADER

No. 4, complete with excavating scoop, ditching scoop, boom and clamshell bucket.

KOEHRING PAVER

No. 18E, half caterpillar, boom and bucket, batch meter. Rated capacity of 28 cu. ft. loose material, 18 cu. ft. of wet concrete. In very good condition.

Complete Line New and Used Equipment.

CONTRACTORS' EQUIPMENT
CONBOY CO.
CONSTRUCTION MACHINERY.
Perry Building *Philadelphia*

Electric Locomotive Crane

1—Browning 15-ton, 10 ft. gauge, 50 ft. boom 1½-yd. bucket, including one 20-ton hopper scale car. Located in Philadelphia.

HOISTING MACHINERY CO.
50 Church St., New York

For Sale or Rent

LOCOMOTIVE CRANE

1—Orton & Steinbrenner 8-wheel, M.C.B., 40-ft. boom, 1-yd. clam shell bucket. Ready for immediate shipment.

MIDWESTERN COMPANY
532 Marquette Bldg., Chicago.

FOR SALE

Steel Superstructure

of West Main Street Bridge over Erie Canal in City of Rochester, N. Y. Two Arch Chord Trusses, 20 web members to each chord. Is 139½ feet long with 43 foot roadway and 11 foot sidewalks on each side of roadway. Weight approximately 120 Tons. This bridge is in excellent condition and can be re-erected for use as a street or highway bridge. It is now in service but is to be removed on account of the construction of a subway. We can furnish detailed plans of the structure.

SCOTT BROTHERS
31 Exchange Street, Rochester, N. Y.

Volume 88 New York, June 29, 1922 Number 26

Engineering News-Record

A CONSOLIDATION OF ENGINEERING NEWS AND ENGINEERING RECORD,
WITH WHICH IS INCORPORATED THE CONTRACTOR

E. J. MEHREN, *Editor*

Contents

Results of Heavy Traffic on Pittsburg Test Road 1066
TRUCKS TRAVEL 96,000 MILES. Wave motion in concrete slab plotted. Moisture percolates slowly in rolled adobe subgrade. Tests of wider scope to follow.
Engineering News-Record, June 29, 1922. 6¾ cols. Ill.

Experiments With the Construction Joints in Concrete Pavement 1069
Engineering News-Record, June 29, 1922. 2 cols. Ill.

Cofferdam Sheeting Stands After Cribwork Is Removed 1070
Engineering News-Record, June 29, 1922. ¾ col. Ill.

Hydraulic Design of Bridge Waterways 1071
BY IVAN E. HOUK.
EACH OPENING requires individual design. Formulas are makeshifts. Cloudburst data. Applying 1913 flood and Pueblo flood figures. Scour velocities. Other considerations.
Engineering News-Record, June 29, 1922. 9¼ cols. Ill.

Railway Maintenance-of-Way Affects Fuel and Operating Economy 1075
Engineering News-Record, June 29, 1922. ¾ col.

Power Company Makes Extensive Triangulation Survey 1076
BY W. MUSSETTER.
DETAILS OF METHODS and instruments used by Southern California Edison Company in first season's work on large area survey. Government standards followed.
Engineering News-Record, June 29, 1922. 6 cols. Ill.

Cast-Iron Pipe Problem and Centrifugally Cast Pipe 1079
ABSTRACT OF COMMITTEE report and papers before American Water Works Association.
Engineering News-Record, June 29, 1922. 5¾ cols.

Pennsylvania R.R. Will Extend Lines to Detroit 1082
Engineering News-Record, June 29, 1922. 3¼ cols. Ill.

The American Construction Council—Its Field for Service 1084
VITAL NEED for the establishment of aggressive business honesty and co-ordination of all elements voiced in two addresses at Washington Organizing Conference, June 19-20.
Engineering News-Record, June 29, 1922. 5¼ cols.

Trolley Deck of Manhattan Bridge Converted to Roadway 1087
Engineering News-Record, June 29, 1922. 1¼ col. Ill.

Factors Affecting Fire Resistance of Building Columns 1088
BY S. H. INGBERG.
Engineering News-Record, June 29, 1922. 4¼ cols.

Editorials 1063
Letters to the Editor 1092
News of the Week 1094
Weekly Construction Market 1102
Construction News 331

Directory of Consulting Engineers 118
What and Where to Buy 122
Searchlight Section 50
Index to Advertisers 128

McGRAW-HILL CO., INC., Tenth Ave. at 36th St., NEW YORK
Cable Address: "Machinist, N. Y."

WASHINGTON, Colorado Building
CHICAGO, Old Colony Building
PHILADELPHIA, Real Estate Trust Building
CLEVELAND, Leader-News Building
ST. LOUIS, Star Building
SAN FRANCISCO, Rialto Building
LONDON, 6 Bouverie St., London, E. C. 4

JAMES H. MCGRAW, President
ARTHUR J. BALDWIN, Vice-President
MALCOLM MUIR, Vice-President
EDWARD D. CONKLIN, Vice-President
JAMES H. MCGRAW, JR., Secy. and Treas.

The annual subscription is $5 to any part of the United States, Canada, Mexico, Alaska, Hawaii, the Philippines, Porto Rico, Canal Zone, Cuba, Honduras, Nicaragua, Peru, Colombia, Bolivia, Dominican Republic, Panama, Salvador and Shanghai, China, Ecuador, Argentina and Spain. Extra postage to other countries, $4 (total $9, or 38 shillings). Single copy, 25 cents.
Change of Address—When change of address is ordered the new and the old address must be given. Notice must be received at least ten days before the change takes place. Printed in U. S. A.

Publishers of
Engineering News-Record — American Machinist
Power — Chemical and Metallurgical Engineering
Coal Age — Engineering and Mining Journal-Press
Ingeniería Internacional
Bus Transportation — Electrical Railway Journal
Electrical World — Electrical Merchandising
Journal of Electricity and Western Industry
(*Published in San Francisco*)
Electrical Review and Industrial Engineer
(*Published in Chicago*)
American Machinist—European Edition
(*Published in London*)

Copyright, 1922, by McGraw-Hill Company, Inc., Published Weekly. Entered as second-class matter April 11, 1917, at the Post Office at New York under the Act of March 3, 1879.
Member Audit Bureau of Circulations. Member Associated Business Papers, Inc.

Circulation of this Issue 30,408

Why a Big Staff?

TWELVE technically trained editors, supported by a staff correspondent in Washington, D. C., and the usual corps of stenographic and other assistants, compose the editorial staff of *Engineering News-Record*.

Why so large a staff?

Because specialization is needed and because in no other way can so broad a field be adequately served.

Here, for example, are the June convention assignments:

MR. DEBERARD—*Salt Lake City, American Association of Engineers.*

MR. BAKER — *Springfield, Mass., City Planning Conference.*

MR. MEHREN — *Washington, American Construction Council.*

MR. WIGHT — *Portsmouth, American Society of Civil Engineers.*

MR. SCHMITT—*Atlantic City, American Society for Testing Materials.*

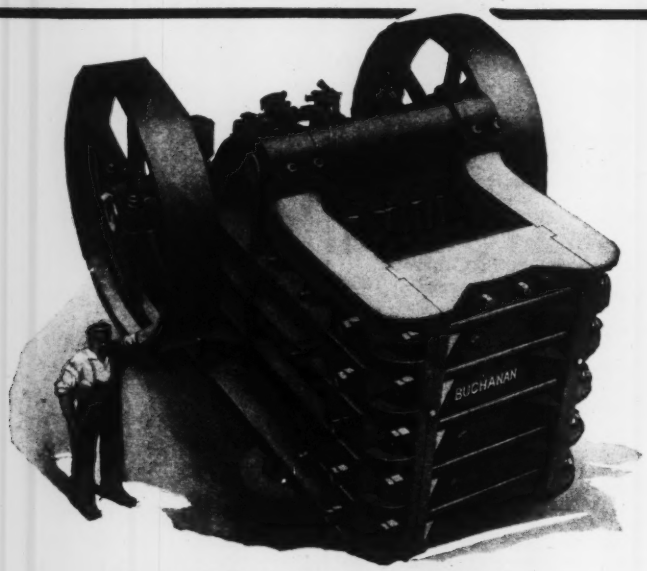
MR. WIGHT — *Atlantic City, American Society for Testing Materials.*

MR. BRAYMER *(editor of "Electrical World"), called in to help—Urbana, Ill., Society for Promotion of Engineering Education.*

Meanwhile other work must go on. MR. HILL, for example, starting the month in North Carolina, finishes it in the Middle West. And five issues of *Engineering News-Record* must come out in June no matter how many editors are away on trips.

THAT is the Why of the big staff—in order that you, the reader of the *News-Record*, may get promptly and from competent observers all the information about worth-while development in civil engineering and contracting.

Buchanan All-Steel Jaw Crushers



Type "C" Buchanan Jaw Crusher

THE precision that goes into Buchanan Jaw Crusher manufacture is reflected in years of continuous service.

All-steel construction, careful attention to every detail, exact machine work, and experience in design that dates back to the very first crushers of this class—these are the factors that enable Buchanan Crushers to stand up to utmost crushing requirements and deliver the output expected of them.

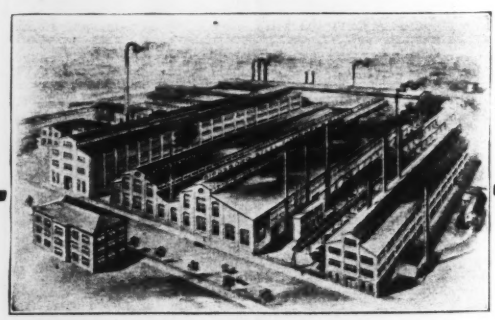
Buchanan All-Steel Crushers are made in sizes up to and including 66 in. x 84 in.

Send for Bulletin N. R.

C. G. BUCHANAN COMPANY, Inc.

92 West St., New York City

Southwestern Representative
David B. Dunn, Inc.
1226 East Eighth St., Los Angeles, Calif.



—Q.?

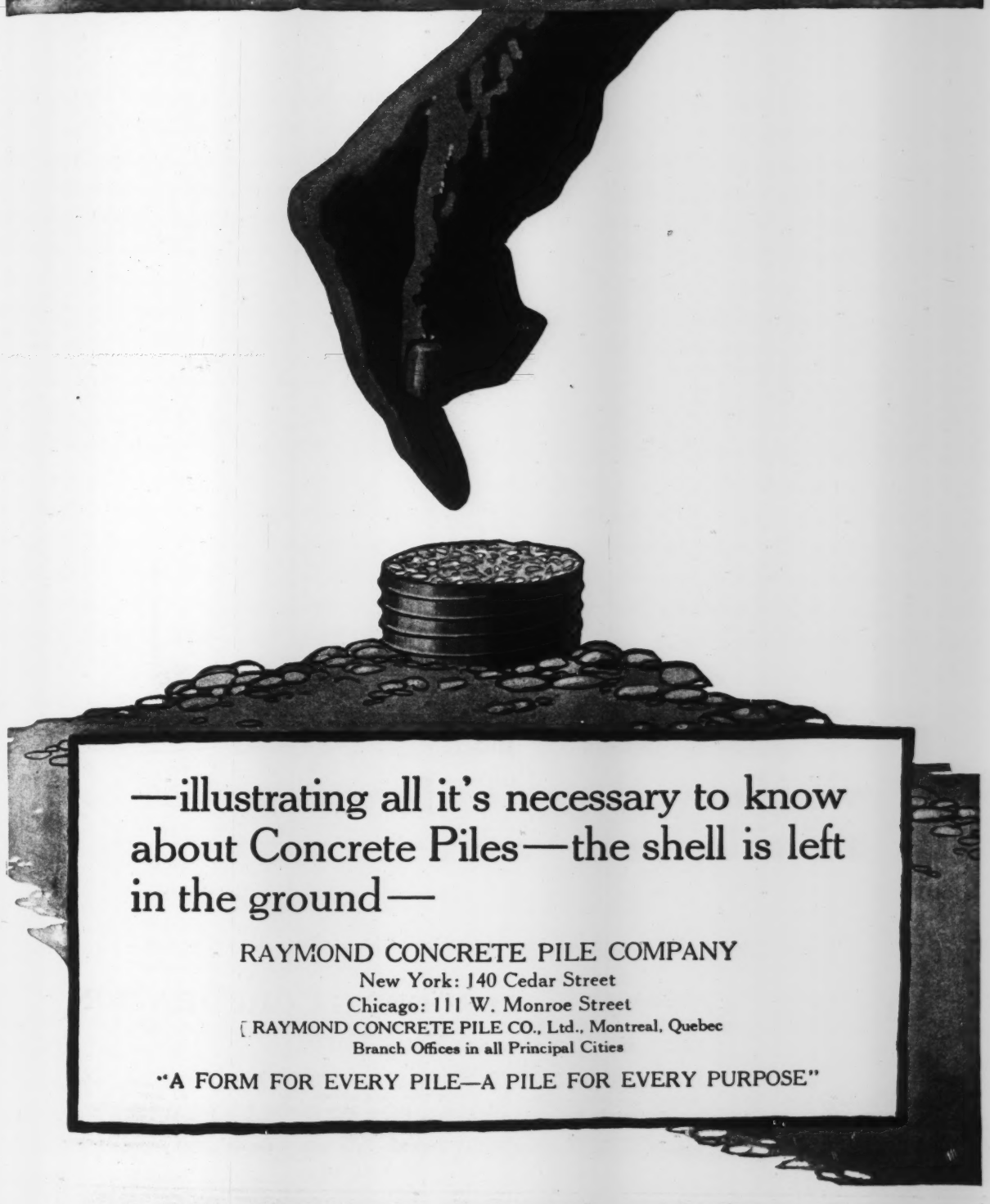
Where are Buchanan Crushers built?

—A.—

Every part of the Buchanan Crusher is made in Birdsboro, Pa. From blast-furnace through steel-foundry and machine-shop to erecting and testing floor, every operation is under the direct supervision of the C. G. Buchanan Company.

The large capacity of the Birdsboro plant for heavy work is assurance to the Buchanan Crusher buyer that orders will go through promptly and without delay.

RAYMOND



—illustrating all it's necessary to know about Concrete Piles—the shell is left in the ground—

RAYMOND CONCRETE PILE COMPANY

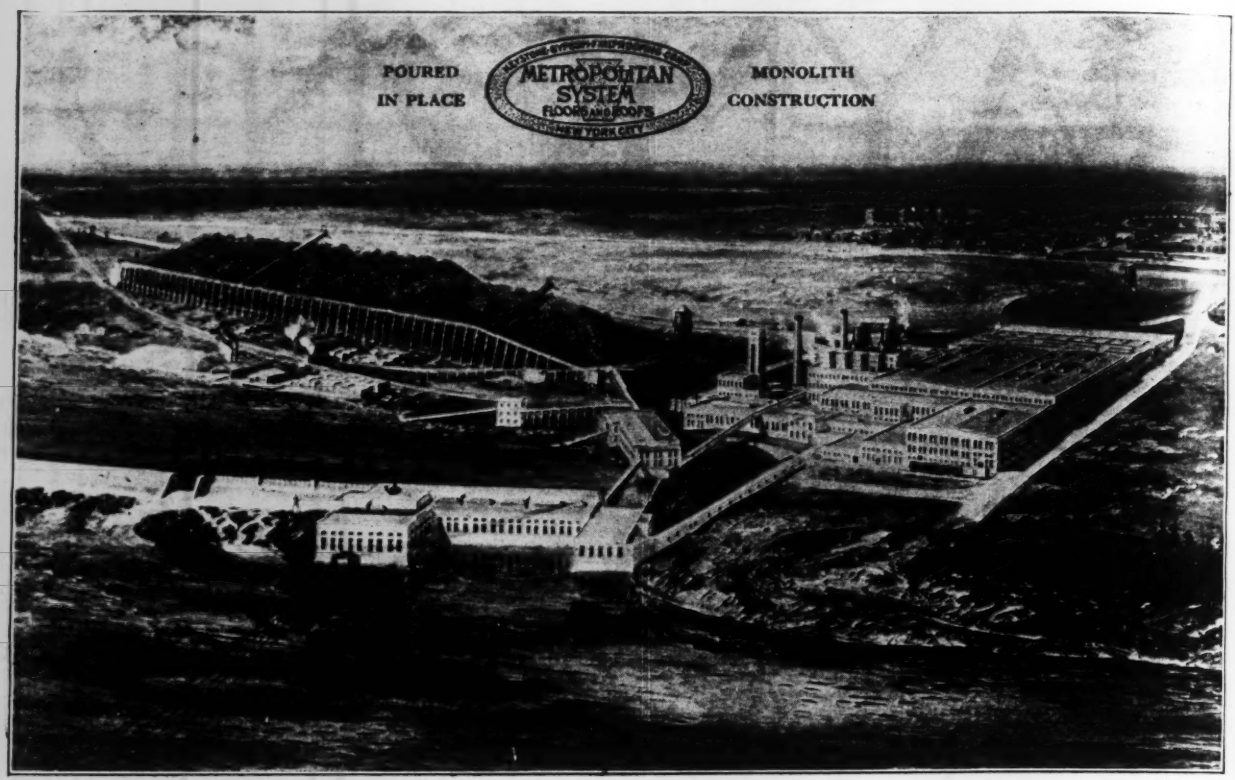
New York: 140 Cedar Street

Chicago: 111 W. Monroe Street

RAYMOND CONCRETE PILE CO., Ltd., Montreal, Quebec

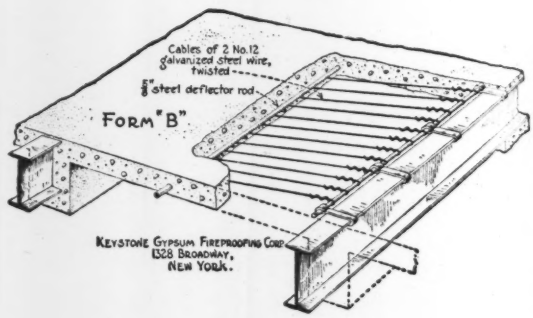
Branch Offices in all Principal Cities

"A FORM FOR EVERY PILE—A PILE FOR EVERY PURPOSE"



Roofs poured in place at 35° below zero!

Metropolitan System Roofing was successfully installed during the rigors of a northern Canadian winter on the $15,000,000 plant of the Abitibi Pulp and Paper Mills at Green Bay (not far from Hudson Bay) in Ontario. Is further comment necessarv?



We also furnish and install the MARKS SYSTEM *of Roof Construction*

KEYSTONE GYPSUM FIREPROOFING CORPORATION

1328 BROADWAY, NEW YORK

BRANCHES:

Philadelphia, Pa.
North American Bldg.

Quebec
203 St. John St.

New England Territory
11 Minnesota Ave.
Somerville, Mass.

Toledo, Ohio
Summitt and Sandusky Sts.

Washington, D. C.
Real Estate Trust Bldg.

Toronto, Ont.
250 Richmond St., W.

Cincinnati, Ohio
1207 Mercantile Library Bldg.

Dayton, Ohio
1038 Reibold Bldg.

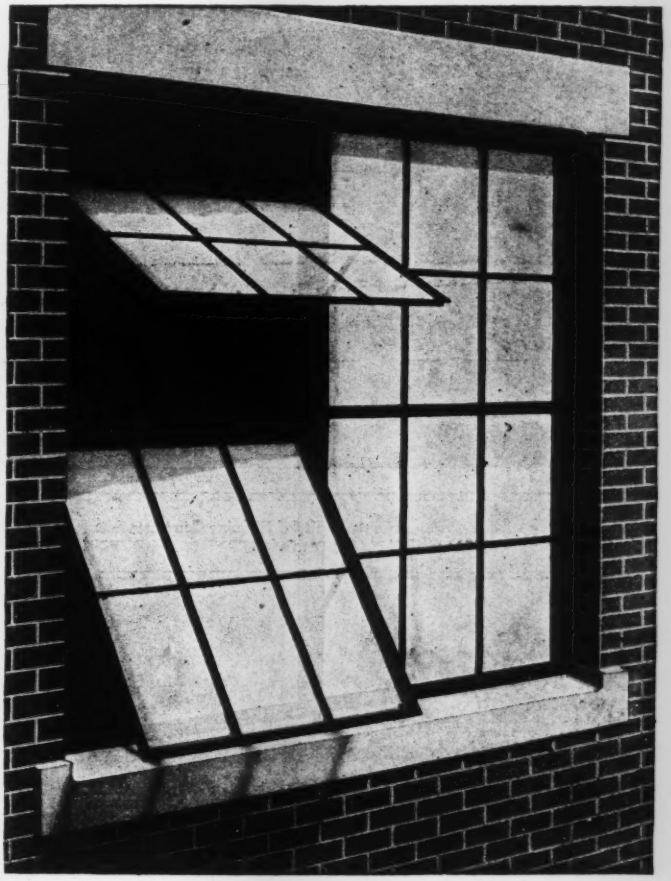
Montreal
603 New Birks Bldg.

Methodist Publishing House
Richmond, Va.

Columbus, Ohio
67 East Long St.

Cleveland, Ohio
9500 Quincy Ave.

Pittsburgh, Pa.
803 Empire Building



There are types that harmonize with almost every architectural design

The Perfection Ventilator

TRUSCON STEEL SASH

The Truscon Perfection Ventilator Sash meets all the demands of architects and engineers for a pivoted window operating entirely outside the sash frame. It is the logical choice for schools, hospitals office and apartment buildings.

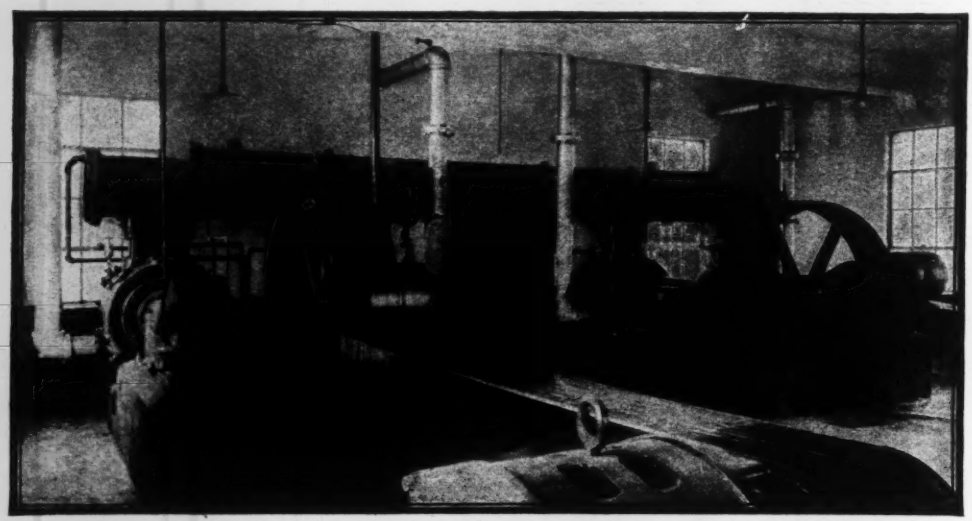
The Perfection Ventilator is reversible, facilitating washing the outside from the interior. The tilted ventilator protects you from direct drafts. Since there are no projections on the interior, the windows may be screened and shaded like the ordinary vertically sliding sash.

Truscon Perfection ventilated sash are made from solid rolled steel sections. The rigid construction makes it impossible for them to warp or get out of adjustment. The steel units are fire resistant and permanent.

Write today for information

TRUSCON STEEL COMPANY, YOUNGSTOWN, OHIO

Warehouses and Sales Offices in Principal Cities, Dealers Everywhere



Two C-P Two-Stage Belt-Driven Air Compressors delivering reliable air power for the Utah Oil Refining Company, Salt Lake City. This type C-P is built in capacities, 511 to 1884 cu. ft. per minute.

Stamina!

TWENTY-FOUR hours a day operation during a period of four years is the non-stop record of a Chicago Pneumatic Air Compressor installed by the Utah Oil Refining Company.

This compressor and four additional Chicago Pneumatics were successively installed because of past performance. Endurance records of C-P Compressors in numerous other industries were thoughtfully considered before installing the first unit.

Such through-and-through stability is typical of all C-P Compressors and results from the fundamental correctness of their design which includes: Simplate flat-disc practically indestructible valves—extremely liberal bearing surfaces—automatic three-step capacity regulation—automatic lubrication.

These outstanding features and hundreds of performance records are your assurance that when you install a C-P Compressor it will *stay on the job!* Ask for Bulletin 400.

After all—what users say counts most! Read what this C-P owner says: "Our C-P Motor-Driven Air Compressor was installed in October, 1917. It operates 24 hours a day, six days a week, and about 12 hours on the seventh day."

Chicago Pneumatic Tool Company

Chicago Pneumatic Building · 6 East 44th Street · New York

*Sales and *Service Branches all over the World*

*Birmingham *Boston *Buffalo *Chicago *Cincinnati *Cleveland *Detroit El Paso Erie Franklin Houston Joplin *Los Angeles *Minneapolis *New Orleans *New York *Philadelphia *Pittsburgh Richmond Salt Lake City *San Francisco *Seattle *St. Louis Basle *Berlin Bombay Brussels Buenos Aires Christiania Copenhagen *Fraserburgh Havana Helsingfors Honolulu Johannesburg *London Manila Milan Montevideo *Montreal Osaka Paris Rio de Janeiro *Rotterdam Santiago Sao Paulo Seoul Shanghai Tientsin Tokyo Toronto Vancouver Winnipeg

C-106

BOYER PNEUMATIC HAMMERS · · LITTLE GIANT PNEUMATIC AND ELECTRIC TOOLS
CHICAGO PNEUMATIC AIR COMPRESSORS · · VACUUM PUMPS · · PNEUMATIC HOISTS,
GIANT OIL AND GAS ENGINES — ROCK DRILLS · · COAL DRILLS

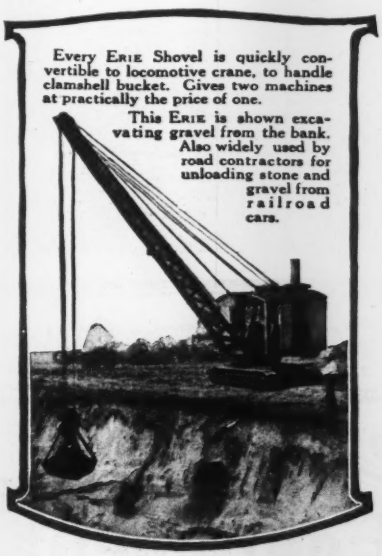
CHICAGO PNEUMATIC

The Compressor with the Simplate Valve

FOR ROAD GRADING, either shallow cuts or heavy cuts; cellar excavation, trench digging, quarrying rock; excavating sand and gravel; stripping and loading coal, etc.

"The caterpillar type ERIE goes anywhere that any other shovel can go, and places others can't go—and gets there quicker!"

—writes J. Hunter East, of the firm of Cooper, Piper & Company—a man who has worked on steam shovels since 1903—



Every ERIE Shovel is quickly convertible to locomotive crane, to handle clamshell bucket. Gives two machines at practically the price of one.

This ERIE is shown excavating gravel from the bank. Also widely used by road contractors for unloading stone and gravel from railroad cars.

"The ERIE has the best caterpillar type mounting I ever saw," *continues Mr. East.* "We have done some work on a 25% grade. (The ERIE will climb 30%.)

"This ERIE has made a mighty good record. We have moved more than 10,000 cu. yds. of rock and dirt in a month, loading to 1½ cu. yd. wagons. In our opinion the ERIE is the best shovel in its class."—*J. Hunter East, of Cooper, Piper & Co., Railroad & Highway Contractors, Field Office, Big Chimney, W. Va. Home Office, Charleston, W. Va.*

This concern has had plenty of previous experience with different makes of steam shovels. They have found that the caterpillar type ERIE has more speed, and greater climbing power, because it is the one continuous tread mounting that is *lubricated.* The power is *put to work,* to move the shovel—not wasted in overcoming internal friction.

Besides, the ERIE has other exclusive features—such as *Perfect Power Steering* from the cab, without a man on the ground to throw clutches; *no choking necessary,* since the thread-belt is quickly locked on a steep grade simply by throwing a small lever; *Moves Ahead While Swinging* to dump, without any loss of time; etc., etc.

We will be glad to send you full details about the ERIE caterpillar type mounting. Write for Bulletin N-60.

ERIE STEAM SHOVEL CO., Erie, Pa., U. S. A.

Incorporated 1883. Formerly BALL ENGINE CO.

Builders of ERIE Steam Shovels, Locomotive Cranes, Railway Ditchers.

Branch Offices Boston, New York, Philadelphia, Pittsburgh, Chicago.

Representatives throughout the U. S. A.

ERIE Revolving Shovels

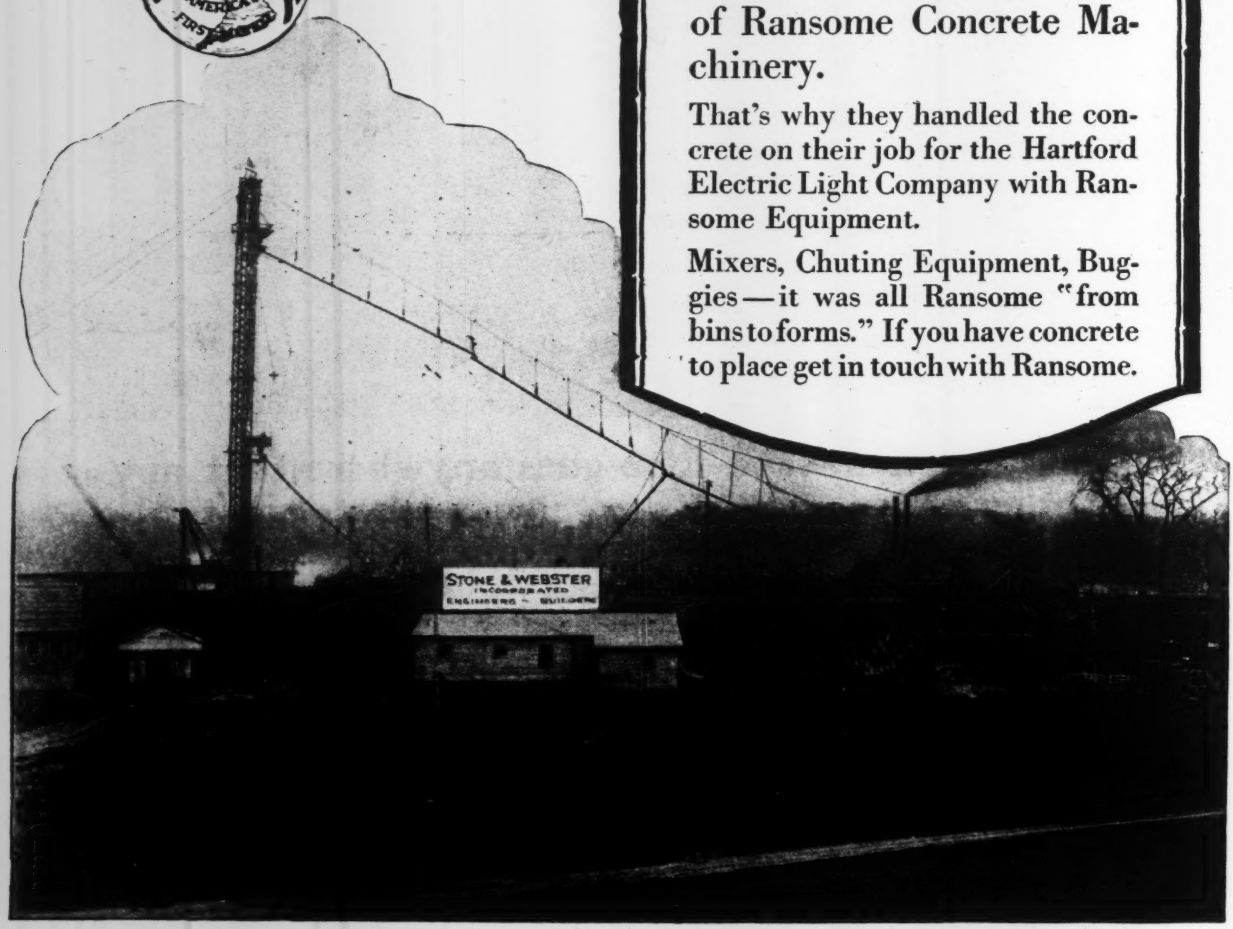
R.P. 52

Ransome handled 98 % of the Concrete

Stone and Webster know—as so many other big contractors know—the worth of Ransome Concrete Machinery.

That's why they handled the concrete on their job for the Hartford Electric Light Company with Ransome Equipment.

Mixers, Chuting Equipment, Buggies—it was all Ransome "from bins to forms." If you have concrete to place get in touch with Ransome.



Without obligation on my part, please send me information on:—
Building Mixers, sizes 4-S__; 7-S__; 10-S__; 14-S__; 21-S__; 28-S__; 56-S__. Driven by Belt__, Steam__, Gasoline__, Electric__.
Paving Mixers, sizes 7-E__; 10-E__; 14-E__; 21-E__. Concrete Chuting Plant for structure__ft. long by__ft. wide by__ft. high.

*NAME*_____ *ADDRESS*_____

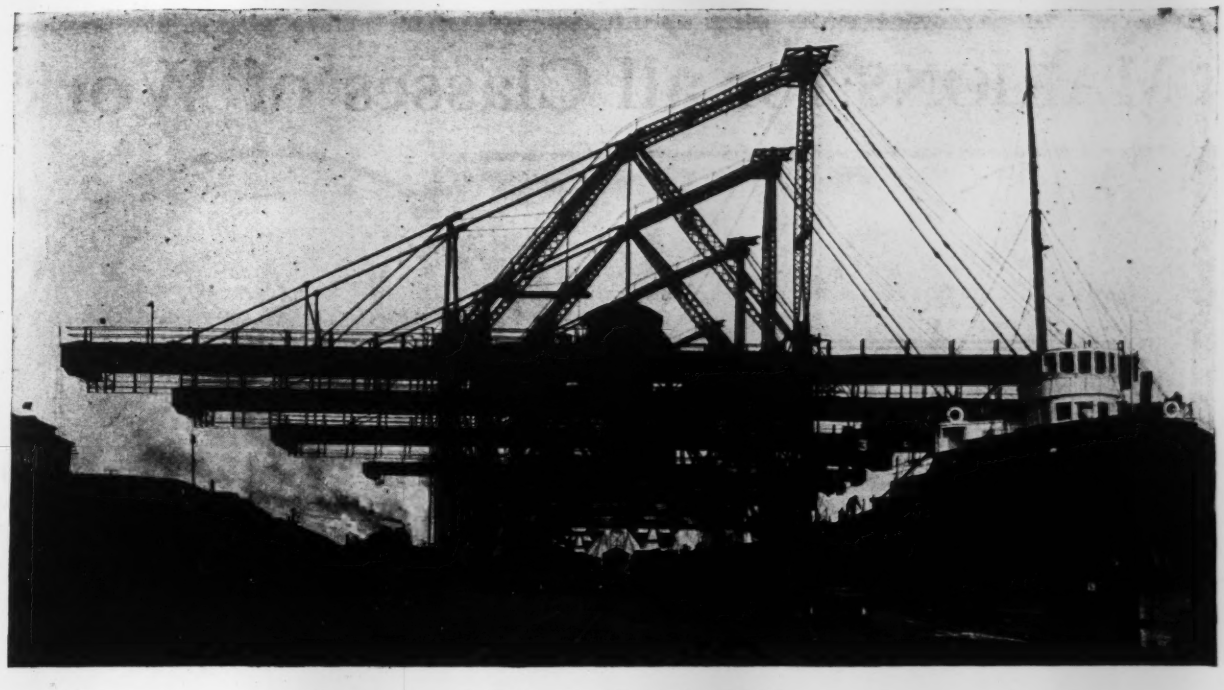
Let-U-Where will direct you to our nearest representative

31-236

Ransome Concrete Equipment

RANSOME CONCRETE MACHINERY CO.

1750 Second Street, Dunellen, N. J.



Unloading 10,000 Tons of Ore in Less than Three Hours

This is a typical example of Brownhoist engineering achievement. For more than forty years the Brownhoist organization has pioneered the development of material handling devices.

Beginning at the period when the movement of materials was a question of man-power, muscle and large sized wheelbarrows, this company has created and developed machinery for a multitude of handling needs.

With products ranging from the gigantic boat unloader, illustrated here, down to every size and type of locomotive crane, Brownhoist engineering skill is speeding up commerce and construction in all corners of the world.

Whether your handling problems be large or small, Brownhoist engineers will be glad to work with you toward lower handling costs.

Brownhoist Products

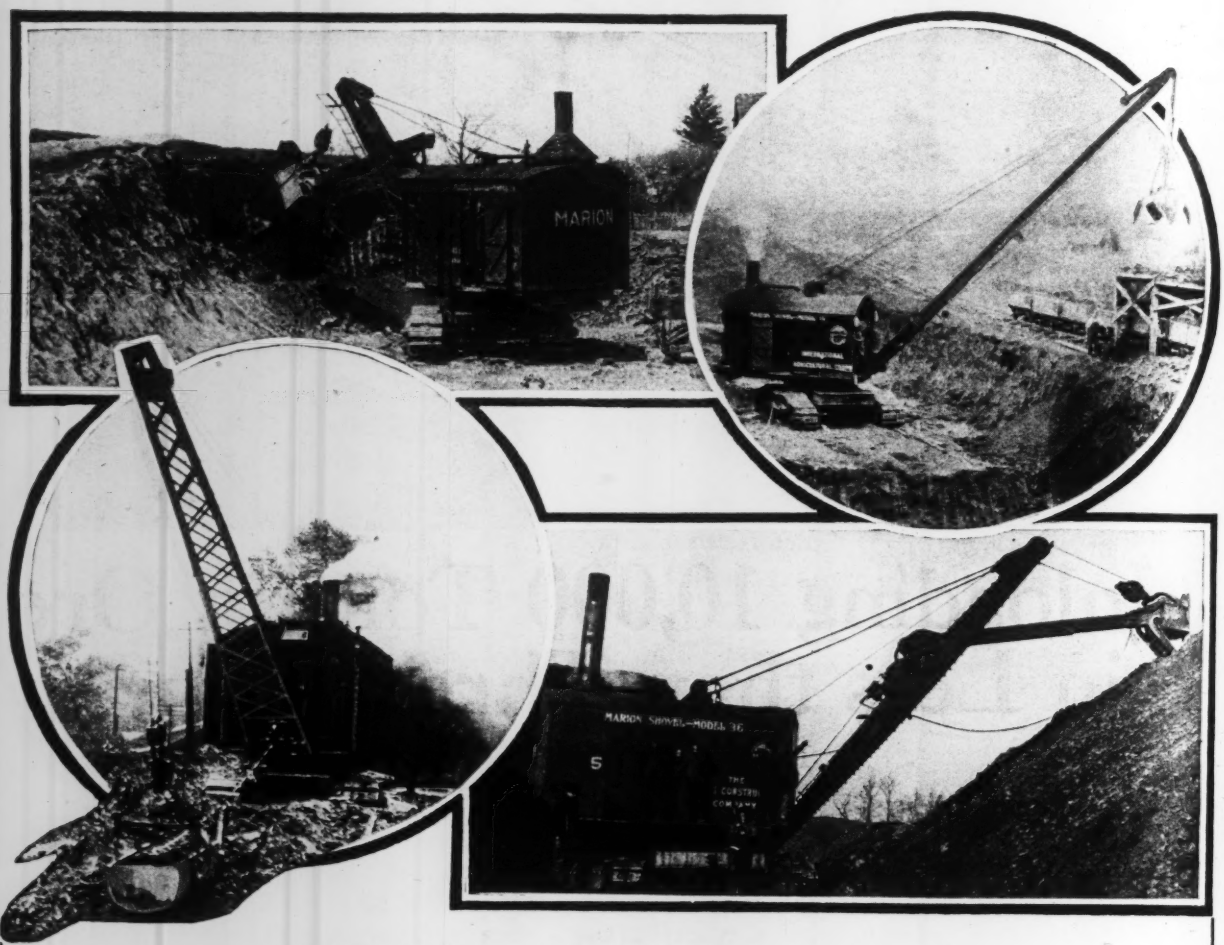
Locomotive Cranes
Concrete Bunkers
Overhead Cranes
Dock Machinery
Bridge Cranes
Buckets

The Brown Hoisting Machinery Co., *Cleveland, Ohio*
Branches: New York, Chicago, Pittsburgh, San Francisco, New Orleans

BROWNHOIST

MATERIAL HANDLING MACHINERY

MARIONS for all Classes of Work



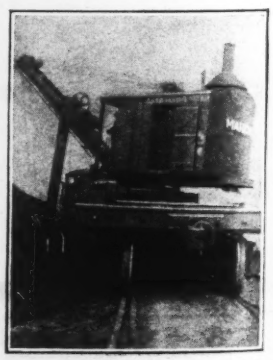
This Versatility of MARION Revolving Shovels is of Inestimable Value to the general contractor.

Every revolving Marion Shovel can be converted, easily and quickly, into Dragline, Clamshell or Orangepeel Excavator or Crane. They are designed for this conversion because it enables the operator to handle a great range of work with one machine. And in each operation Marions have steam-shovel strength and efficiency.

For small drainage and irrigation ditches they give capacity and economy; also wider working range and ability to deposit material at a greater distance from the ditch. For building levees, handling sand and gravel from wet pit, making fills. High lift from basement and other wide-range work. Also as a pile driver.

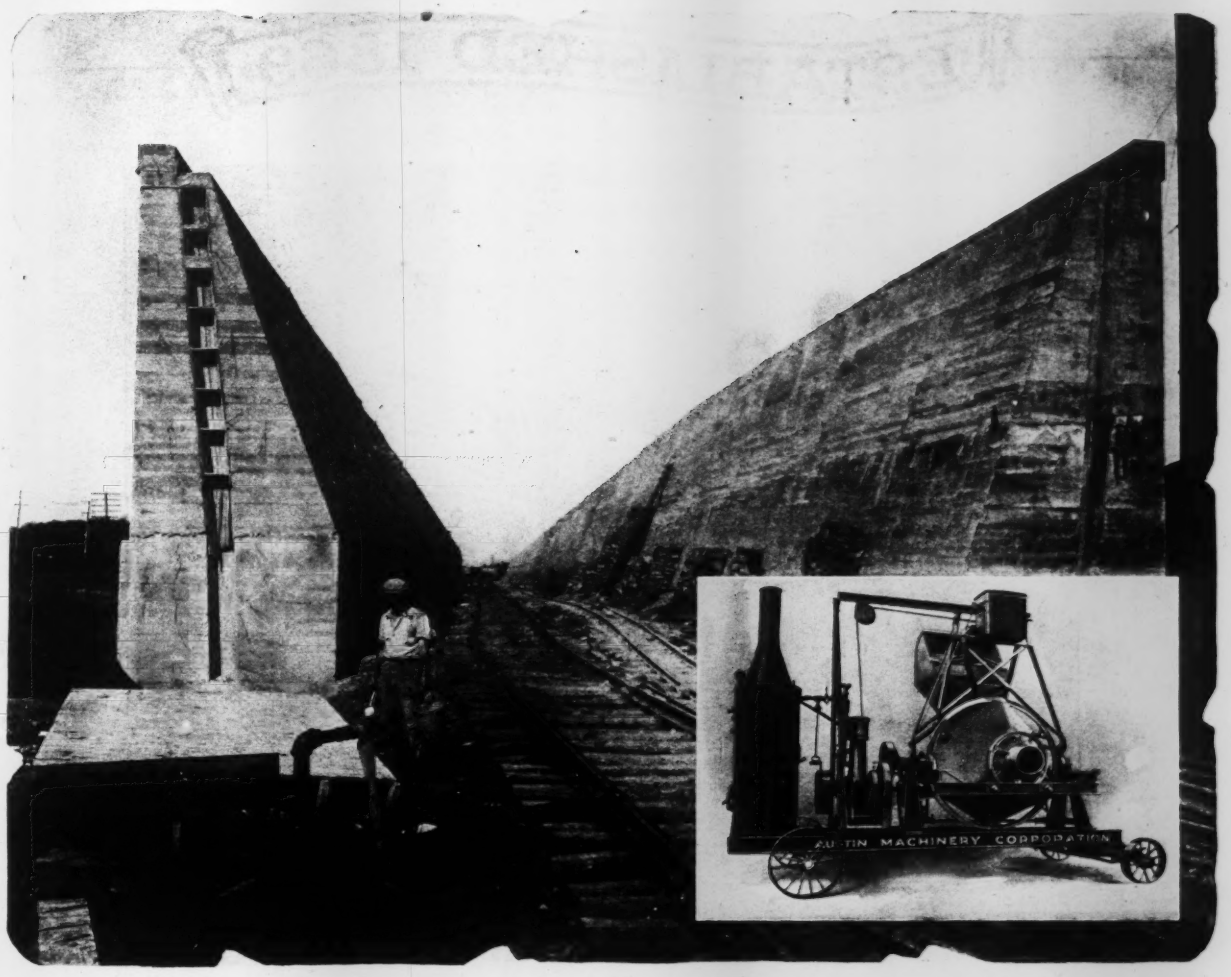
Shovels
Steam Gasoline Electric
Revolving and Railroad Types
Dragline
Clamshell and Orangepeel
Excavators
Dredges
R.R. Ditchers
Log Loaders
Ballast Unloaders
Etc.

Consider these facts and what they can be made to mean to YOU in your work. In road building, railroading, excavating for buildings and pipe lines; in mining, quarrying, logging and contracting; in clay pits and brick plants. We have provided for an almost unlimited range of application.



The Marion Steam Shovel Co.

MARION, OHIO



RAILROADS, TOO, CHOOSE AUSTIN MIXERS

CUBE MIXERS
CUBE-HEX PAVERS
CONCRETE TAMPERS
GASOLINE LOCOMOTIVES
INDUSTRIAL CARS
BATCH BOXES
WAGON LOADERS
SUBGRADERS
TRUCK TURNTABLES
TRENCH MACHINES
WHEEL EXCAVATORS
BACKFILLERS
DRAGLINES
CLAMSHELLS
CRANES
SHOVELS
SKIMMERS

Track elevation work, bridge construction, terminal improvements—railroad jobs, one and all, demand super-strength concrete.

Five Austin 28-S Cube Mixers were used on the Pennsylvania Railroad elevation near Rahway, N. J., here illustrated.

Cube-mixed concrete went into the Chicago track elevation work of both the Illinois Central and Northwestern Railways.

And a cube-equipped central mixing plant provided super-strength concrete for the Detroit River Tunnel of the Michigan Central Railroad.

Austin Cubes spell production, performance, quality and economy. Capacity and mounting are matters of choice, depending upon the particular work.

Our new Mixer Catalog gives complete specifications on the nine sizes of Austin Cubes. Ask for Catalog No. 3.

An attractive novelty paper weight, showing the cube-mixing principle in miniature will also be sent if you specify GC-3.

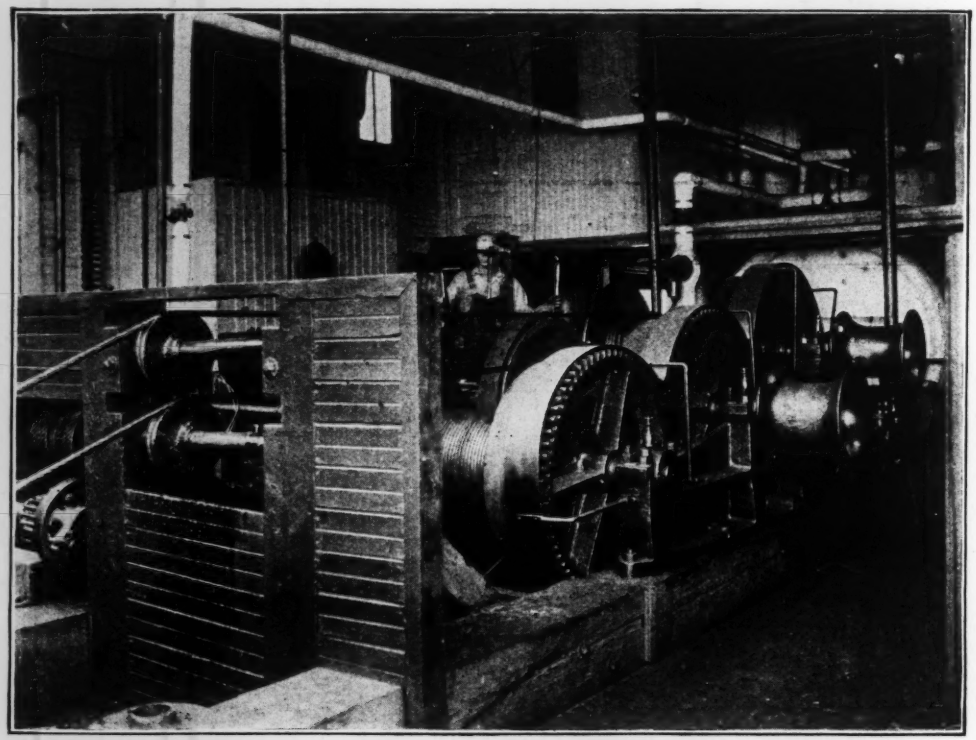
Austin Machinery Corporation

Railway Exchange Building
Chicago, U. S. A.

BIRMINGHAM
DAVENPORT
DETROIT
KANSAS CITY
MILWAUKEE
MINNEAPOLIS
NEW YORK
NEW ORLEANS
OMAHA
PORTLAND
SAN FRANCISCO
WOODSTOCK, ONT.

AUSTIN MACHINERY
MOVES THE EARTH—
MIXES THE CONCRETE
TRADE MARK

ESTABLISHED 1869



In Service 10 Years—Still In A-1 Condition —Typical of MUNDY Equipment!

TRADE MARK ESTABLISHED 1869

This three-drum Mundy Hoisting Engine has been used for the past 10 years on one of three steam derrick barges operating clam shell buckets, removing gravel from the river bed.

This is so typical of Mundy durability that further comment is superfluous.

Write for Catalogs.

J.S. MUNDY

HOISTING ENGINE COMPANY

NEWARK, NEW JERSEY, U.S.A.

MAIN OFFICE & WORKS

BRANCH OFFICE: NEW YORK CITY

ATLANTA
BEAUMONT, TEXAS
BOSTON
BUFFALO
CHARLESTON, S. C.
CHICAGO
CINCINNATI
CLEVELAND
DALLAS, TEXAS
DES MOINES
GRAND RAPIDS
HOUSTON, TEXAS
HUNTINGTON
INDIANAPOLIS
JACKSONVILLE
KANSAS CITY
KNOXVILLE
LOS ANGELES
MILWAUKEE
MINNEAPOLIS
MOBILE, ALA.
MONTREAL
NEW ORLEANS
NORFOLK, VA.
OTTAWA, CANADA
PHILADELPHIA
PITTSBURGH,
PORTLAND, ORE.
RICHMOND
ROANOKE, VA.
SAN FRANCISCO
SALT LAKE CITY
SEATTLE, WASH.
SHREVEPORT, LA.
ST. LOUIS

Use the HAISS Creeper Loader

to earn a wider margin of profit on a lower bid!

IT will save labor and cut handling costs—a direct saving. And it will speed the work, keep trucks moving and every man hustling to keep up with its pace—a saving just as important.

It is a heavy duty machine, mounted on creeper treads that take it anywhere—no going too soft or too rough. Powerful too—sufficient for any emergency.

It lives up to the HAISS loading reputation—every bucket heaping *full*, the ground cleaned-up *clean*, no time loss for moving—the machine crowds in under power and digs a path right through the pile.

Only HAISS Loaders have the unique HAISS Self-Feeding Propellers—and there is no feeding device which compares with them in efficiency.

You want the best your money will buy—Ask about the HAISS Creeper Loader Bulletin No. 521.

The George Haiss Mfg. Co., Inc.
140th St. and Rider Ave., New York
Established 1892
Representatives throughout the world
Millars' Timber & Trading Co., London, British representatives.

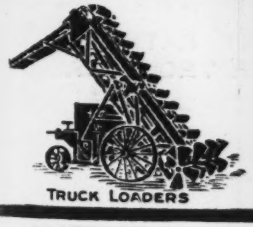
H-48

A word with the HAISS Engineer—

The HAISS Machine is the only **automatic loading machine with patented slow speed crowding gear.** The machine does not have to be backed in and out in trying to keep crowded against the face of the pile. There is no violent or unwieldy manouvering necessary. The loader is crowded in with a **powerful, slow** drive precisely as the operator finds it necessary.

This is also an exclusive HAISS Feature.

These are only two of the advantages of the HAISS Creeper. The HAISS Engineer will tell you of another next time. Watch this page.

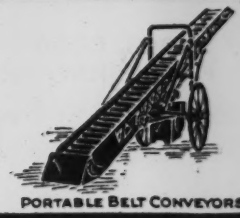


TRUCK LOADERS

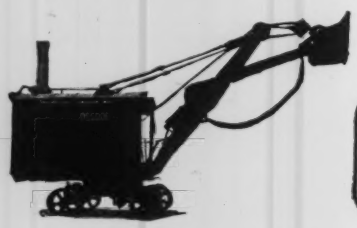
HAISS

MATERIALS HANDLING EQUIPMENT

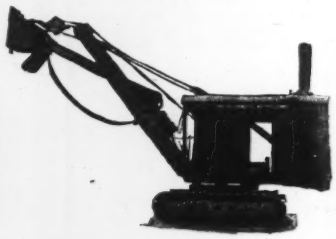
CLAM SHELL BUCKETS



PORTABLE BELT CONVEYORS

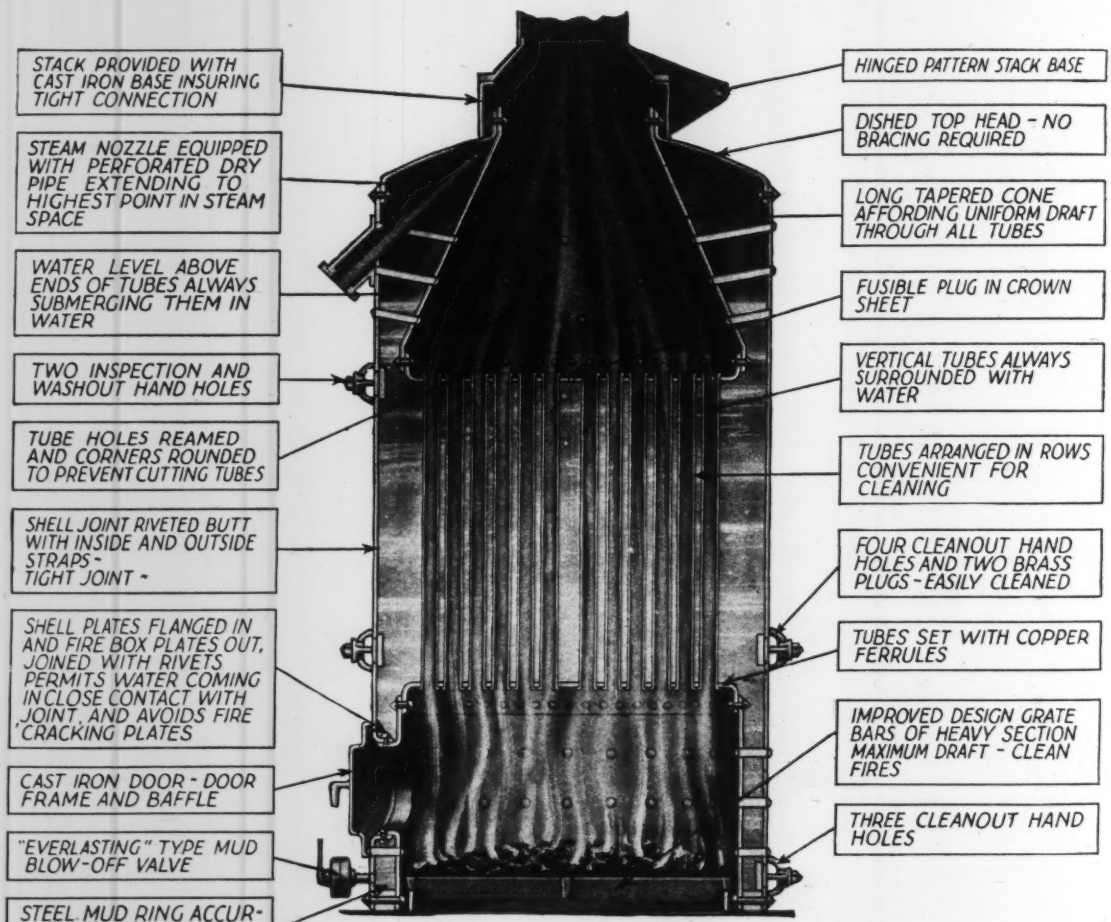


OSGOOD
STEAM SHOVELS



3-4 AND 1 CU. YD. STEAM SHOVELS

Vertical Submerged Tube Type Boiler


STACK PROVIDED WITH CAST IRON BASE INSURING TIGHT CONNECTION
STEAM NOZZLE EQUIPPED WITH PERFORATED DRY PIPE EXTENDING TO HIGHEST POINT IN STEAM SPACE
WATER LEVEL ABOVE ENDS OF TUBES ALWAYS SUBMERGING THEM IN WATER
TWO INSPECTION AND WASHOUT HAND HOLES
TUBE HOLES REAMED AND CORNERS ROUNDED TO PREVENT CUTTING TUBES
SHELL JOINT RIVETED BUTT WITH INSIDE AND OUTSIDE STRAPS - TIGHT JOINT -
SHELL PLATES FLANGED IN AND FIRE BOX PLATES OUT, JOINED WITH RIVETS PERMITS WATER COMING IN CLOSE CONTACT WITH JOINT, AND AVOIDS FIRE CRACKING PLATES
CAST IRON DOOR - DOOR FRAME AND BAFFLE
"EVERLASTING" TYPE MUD BLOW-OFF VALVE
STEEL MUD RING ACCURATELY MACHINED AND SECURED WITH RIVETS
HINGED PATTERN STACK BASE
DISHED TOP HEAD - NO BRACING REQUIRED
LONG TAPERED CONE AFFORDING UNIFORM DRAFT THROUGH ALL TUBES
FUSIBLE PLUG IN CROWN SHEET
VERTICAL TUBES ALWAYS SURROUNDED WITH WATER
TUBES ARRANGED IN ROWS CONVENIENT FOR CLEANING
FOUR CLEANOUT HAND HOLES AND TWO BRASS PLUGS - EASILY CLEANED
TUBES SET WITH COPPER FERRULES
IMPROVED DESIGN GRATE BARS OF HEAVY SECTION MAXIMUM DRAFT - CLEAN FIRES
THREE CLEANOUT HAND HOLES

Built to A.S.M.E. Code

TUBES COMPLETELY SUBMERGED IN WATER TO PREVENT EXTREME EXPANSION, THUS REDUCING LEAKING AND OTHER BOILER TROUBLES.

The OSGOOD Company

Marion, Ohio, U. S. A.

Buda engines, due to their records for no-delay, low cost performance, are standard on all Barber-Greene wagon loaders.

Buda Power Keeps the Job Moving

On wagon loaders, locomotives, ditchers, pumps, compressors and other construction machinery Buda engines are giving the same smooth, trouble-free power they furnish in heavy duty trucking. Buda engines are built rugged to stand the grind of hard, continuous working. They help finish the job on time. Their upkeep costs are low. They are backed by a nation-wide system of Buda parts distributing stations.

THE BUDA COMPANY, HARVEY CHICAGO SUBURB ILL.
Established 1881

BUDA
The
ENGINE

What Is Cement?

What is this finer-than-flour building material called cement, that you can mix with water, sand, and stone or pebbles, and cast into all sorts of shapes that become as hard and enduring as solid rock?

Portland cement consists principally of silica, lime, and alumina. In cement manufacture these are obtained from (1) Cement rock and limestone; (2) Limestone or marl and shale or clay; (3) Blast-furnace slag and limestone.

First the rock is quarried and transported to the mill. Then it is ground to a powder, analyzed, and the several ingredients mixed in accurate proportions.

Next it is subjected to long and gradually increasing heat until, at about 3000 degrees Fahrenheit, the mixed materials decompose and fuse into hard balls, known as clinker.

Then this hard clinker is cooled, mixed with a definite proportion of gypsum, and again ground to a powder so fine that at least 78 per cent of it will pass through a sieve having 40,000 holes to the square inch.

Finally this finished product must be analyzed to determine that it conforms to the exacting specification requirements of cement manufacture, packed in bags and placed in cars for shipment.

The manufacture of cement is a complex process involving great care, skill and expense, and requiring an enormous capital investment.

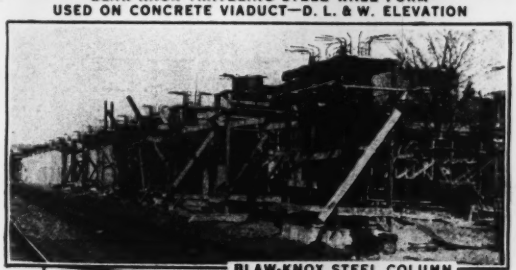
This Is the Age of Cement

PORTLAND CEMENT ASSOCIATION
111 West Washington Street
CHICAGO

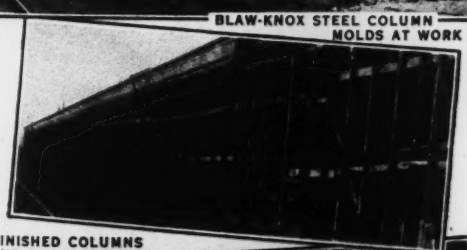
TO FURTHER THE BEST INTERESTS OF CEMENT USERS

PARTIALLY COMPLETED VIEW, D. L. & W. ELEVATION—BRICK CHURCH STATION, EAST ORANGE, N. J. BLAW-KNOX COLUMN FORMS USED TO FORM THESE COLUMNS

BLAW-KNOX TRAVELING STEEL WALL FORM USED ON CONCRETE VIADUCT—D. L. & W. ELEVATION



BLAW-KNOX STEEL COLUMN MOLDS AT WORK



FINISHED COLUMNS AND PANEL SHORING

H. F. Curtis says: Blaw-Knox Steel Forms Show a 50% Saving

H. F. Curtis is using Blaw-Knox Steel Forms on the D. L. & W. elevation work at East Orange, N. J. This includes the construction of retaining walls and a concrete viaduct 75 ft. wide, 1080 ft. long, supported by 230 round concrete columns. The long experience of Mr. Curtis in connection with engineering achievements of this character renders his opinion of special value. He says—

> *"On the above work I have and am still using the Blaw System of Steel Forms and by the use of these forms I have effected a saving over wood forms which I have used on previous work of this nature. I might add that the use of steel forms on my work has made a saving of 50% over wood forms."*

Mr. Curtis is enthusiastic about Blawforms because they prove their practical value and saving at every turn. Blaw-Knox Form Engineers will develop forms for you and prove their savings conclusively.

There is no job too big or too complicated for Blawforms to handle. Write for our catalog illustrating the work Blawforms have done.

Blaw-Knox Products

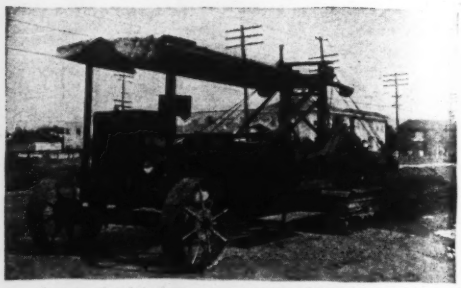
Sectional Steel Buildings—Clamshell Buckets—Fabricated Steel Specialties—Pressed, Riveted and Welded Plate Work—Steel Forms for Concrete Construction—Transmission Towers and Poles—Water Cooled Equipment for High Temperature Furnaces—Sheldon Mechanical Gas Producers—Mowry Dolomite Gun—Road Builder's Equipment.

BLAW KNOX COMPANY

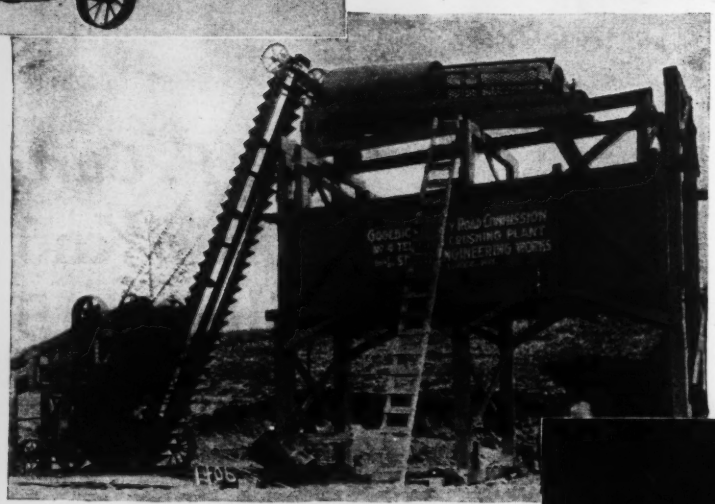
PITTSBURGH, PA.
601 Farmers Bank Bldg

New York-Chicago-Detroit-Baltimore
Birmingham-San Francisco-London, Eng.

Concrete mixers equipped with Rex Chain can be depended upon for smooth operation and long life.



As a result of the better service it gave their customers the Pawling & Harnischfeger Company adopted Rex Chain as standard on all thirteen sizes of P. & H. ditchers.



The crushing plants built by the Smith Engineering Works are recognized for sturdiness. They are equipped with Rex Chain.

The well-known Russell graders are fitted with Rex Chain to assure utmost dependability.

This cement bag elevator built with Rex Chain greatly reduces handling costs on this building project. There are many ways in which Rex Chain can save on building costs.

REX

See That Your Machines Have REX CHAIN—

It Runs Smoother, Lasts Longer

One of the many savings effected for you by construction machinery builders equipping with Rex Chain is a maximum protection against breakdowns and delays.

Rex Chain is built to stand the wear and tear of continuous, heavy duty service. More than a dozen shop tests and inspections assure uniform strength in every link. It holds its pitch a long time.

Whether used on concrete mixers and pavers, road graders, ditchers, rock crushers, steam shovels, conveyors, cranes, wagon loaders or other construction machinery Rex Chain makes for steady, economical working.

Rex Chain should be on the machines you buy. You can tell it by the word Rex or trade mark ——◇—— cast into each link. Make it a point, also, to use Rex Chain for all repairs and replacements. There is a size and type to fit every transmission and conveyor need.

CHAIN BELT COMPANY, MILWAUKEE
Branch Offices and Representatives in Principal Cities in the United States and Abroad

CHAIN

Rex Sprockets, Rex Conveyors, Rex Concrete Mixers and Pavers, Rex Traveling Water Screens

There Is No Substitute for Consistency

DAY-in-and-day-out dependability is a motor quality that can neither be counterfeited nor acceptably supplanted. There are no degrees—a motor either has it or has not.

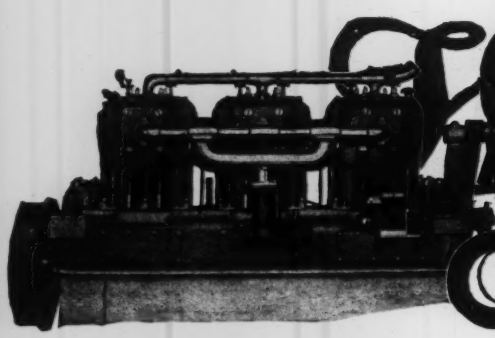
Motor achievement can go no higher than insuring its presence, and for its absence there can be no lasting compensation.

Neither cheapness of first cost, flash of appearance nor superficial sales arguments can be a reasonable temptation against the dominating dependability built into Wisconsin Motors.

Their consistency knows no substitute.

Offices in New York, Chicago, Cleveland, Los Angeles, Seattle.

WISCONSIN MOTOR MFG. CO.
MILWAUKEE WISCONSIN



Wisconsin
Consistent
Consistent

North Carolina Roads Are MULTIFOOTE Roads

North Carolina—that old North State of the South—is building hard roads. The sort of hard roads that typify the progressive spirit of the State.

Actual construction was started under a $50,000,000 bond issue in 1921; to this has been added federal aid money and local funds from cities and counties.

And North Carolina contractors know how to build good enduring roads—they know the value of up to date equipment in road construction and they know that only by good work and fast work can their business be built up and profits returned.

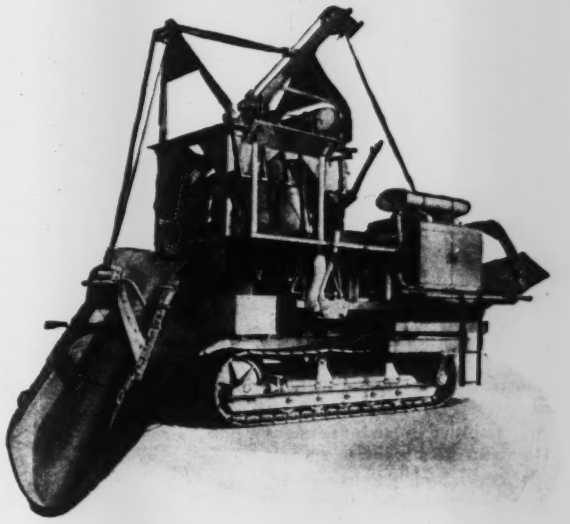
That's the reason why they are using MultiFoote pavers on nearly every job in the State this spring.

Get in touch with our nearest agent—let him show you why MultiFootes are so much in demand and why 65% of all our sales are repeat orders.

GENERAL AGENTS

Foote Concrete Machinery Co., 1241 Michigan Ave., Chicago, Ill.
Edward R. Bacon Co., 51 Minna St., San Francisco, Cal.
E. J. McHarg & Co., 3 Crandall St., Binghamton, N. Y.
Wilcox Bros., Inc., 152 West 42nd St., New York, N. Y.
Burton Franklin, Volunteer Bldg., Chattanooga, Tenn.
Made by Foote Co., Inc., Nunda, N. Y.

Thirty-five



Thirty-five of the forty-one modern full-length traction tread pavers that started off the paving season in North Carolina this spring are MULTIFOOTE Pavers. Their owners are:

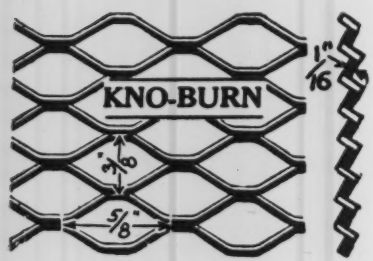
	Number Owned	Size	Bought their first
Robert G. Lassiter & Co.	6	27E & 21E	1919
West Construction Co.	3	21E	1921
Elliott-Sholes Company	2	21E	1921
Murray Construction Co.	3	21E	1921
Willard-Wilcox Co.	1	21E	1921
Lampton & Burka	2	27E & 21E	1920
Atlantic Bitulithic Co.	1	14E	1921
F. J. McGuire & Co.	1	21E	1921
Fiske-Carter Construction Co.	1	21E	1921
Hedrick Construction Co.	1	21E	1921
Pitt County	1	21E	1921
Elliott & Sons & R. E. Boggs	1	21E	1921
Pittman Construction Co.	1	21E	1922
John N. Bohannon	1	21E	1922
Redman Construction Co.	1	21E	1922
Speed-Parker, Inc.	1	21E	1922
R. M. Hudson Co.	1	21E	1922
Hagedorn Construction Co.	1	21E	1922
George R. Martin	1	21E	1922
Ashville Paving Co.	1	21E	1922
Southern Dray Company	1	21E	1922
D. J. Brookshire & Co.	1	21E	1922
Wilson Construction Co.	1	21E	1922
Campbell Contracting Co.	1	21E	1922

ROAD MULTI FOOTE PAVER
TRADE MARK REGISTERED

Nemco EXPANDED METAL Products

For Every Building Requirement

KNO-BURN



AN economical flat, small diamond meshed lath for interior plastering stucco, ratproofing and fire stopping. Requires a minimum amount of plaster, very rigid, yet easily cut, shaped and plastered. 24, 25, 26, 27 gauges—Sheets 24 x 96 in. Furnished painted, cut from Galv. Sheet, Pure Iron and Copper Bearing.

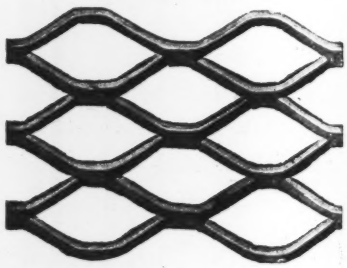
FREE SAMPLES
CATALOGS
SPECIFICATIONS

Dealers Everywhere
Prompt Deliveries

ECONO Expanded Metal

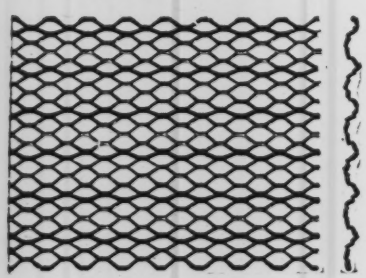
A MESHED reinforcing for all types of concrete work. Saves time and labor of tying and placing bars. Large flat sheets in various gauges and sizes of mesh, ranging from ½ in. x 1½ in. to 5¼ in. x 12 in. (small meshes mostly used for machine guards, open partitions, etc.)

EUREKA



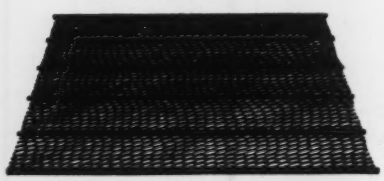
FLAT lath. Especially indicated for 2 in. Solid Partitions, Ornamental Plastering and wherever as small a meshed lath as KNO-BURN is not required. 24 and 26 ga. Sheets (respectively) 22 in. and 21 in. x 96 in. Painted, Cut from Galv. Sheet, Pure Iron and Copper Bearing.

CORRUGATED



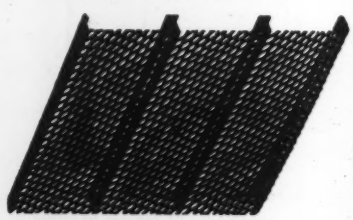
SELF-FURRING. Especially recommended for stucco. Furnished in either the KNO-BURN or EUREKA types of mesh and in the same weights gauges and finishes.

LONGSPAN



SELF-FURRING lath for partition work, ceilings, etc. U-ribs ⅜ in. high are easily spliced. Rigid, ships well. Sheets 2 ft. x 8 ft. 24, 26, 28 gauges.

T-RIB CHANELATH



USED with equal satisfaction either as a self-furring plastering lath or as a combined form and reinforcing for concrete. Especially indicated for roofs, partitions. T-ribs ⅞ in. high. 24, 26, 28 gauges. Sheets 4 in. to 48 in. wide. Lengths 3 to 12 ft.

NORTHWESTERN EXPANDED METAL CO.

1200 OLD COLONY BLDG., CHICAGO, ILLINOIS

Insley Equipment for
Concrete Distribution

THE Flexibility of Concrete Placing Equipment is an important factor in the efficient distribution of Concrete. By a glance at the illustration below the Flexibility of **The Insley Steel Tower, Quick Shift, Counterweight Chute Plant** is at once apparent.

The Boom Supported Chute and Counterweight Chute make it possible to move from one pouring position to another with minimum effort, and the Quick Shift feature makes it possible to save much time when vertical shifts have to be made as the work progresses in height.

These Time and Labor Saving features make this the ideal Concrete Placing Equipment for the up-to-date Contractor. Our Engineers are at your service and will cheerfully help you work out your Equipment Problems.

INSLEY MANUFACTURING CO.
Engineers and Manufacturers
INDIANAPOLIS

INSLEY
CONCRETE PLACING EQUIPMENT
INDUSTRIAL CARS — DUMP BUCKETS
STEEL DERRICKS

Lackawanna Steel Sheet Piling

A cellular or pocket type cofferdam used successfully in the Niagara River

The cells or pockets of this cofferdam vary in size, the smallest being 15 ft. in width and the largest 23 ft. depending upon the depth of the water.

The steel sheet piling was assembled around timber templates conforming with the inner dimensions of the pockets by means of a derrick mounted on a scow. After the closure was made, each pile was driven to refusal. Concrete was deposited under water in the cells to a depth of about 2 ft. after the rock was thoroughly cleaned. The pockets were then filled with river sand and gravel.

SECTION

DOUBLE-LOCK
LACKAWANNA
INTERLOCK

No trouble was experienced in unwatering this area and no movement of the pockets was discernible.

The rock excavation within the cofferdam was made to grade. The guide walls and gate piers were also built inside of this structure.

This design is especially desirable where, owing to the character of the underlying material, the gravity type of cofferdam is necessary. All interior bracing is also eliminated, which otherwise would impede the construction work.

For further reference to this development see article in the Engineering News-Record of April 27, 1922, by the engineers of the Power Company and our ad of June 22, 1922.

If you contemplate the use of steel sheet piling in your next job, let our Engineers help you analyze your work. Their advice is free.

NIAGARA FALLS POWER COMPANY

JOHN L. HARPER, *Chief Engineer*
O. D. DALES, *Construction Engineer*
J. A. SHEPARD, *Asst. Engineer*
N. A. GIBSON, *Hydraulic Engineer*

Lackawanna Steel Company

General Sales Offices and Works: Lackawanna, N. Y.

BUFFALO BOSTON CHICAGO CINCINNATI CLEVELAND DETROIT NEW YORK PHILADELPHIA ST. LOUIS SAN FRANCISCO

Licensees for the manufacture of Lackawanna Steel Sheet Piling:

For Great Britain and British Colonies in the Eastern Hemisphere, Cargo-Fleet-Iron Co., Ltd., Middlesbrough, England. For France, Italy, Spain, French Colonies and Protectorates, Italian Colonies and Spanish Colonies in the Eastern Hemisphere, Cie des Forges & Acieriesde la Marine et d'Homecourt, Paris, France.

Sole Exporter for Other Countries: CONSOLIDATED STEEL CORPORATION, 25 Broadway, New York

Greater Range

"HEY THERE! PULL THAT TRUCK AHEAD!" shouted the shovel runner.

"That fellow must think this is an ordinary shovel," said he to the fireman as the driver pulled up to safety. "He tried to get so close for a load that another foot and he'd be down in here with us. Well, he's all set. Let's go!"

And he did go. In double quick time the truck was loaded. Another took its place. Each truck stood well away and the Thew reached it with perfect ease, putting every dipperful up and out with no lost motion.

That's the advantage of the ¾ yard Thew. It is designed and built for the standard 19′ 6″ boom. This gives it the ability to load ahead for which it is famous.

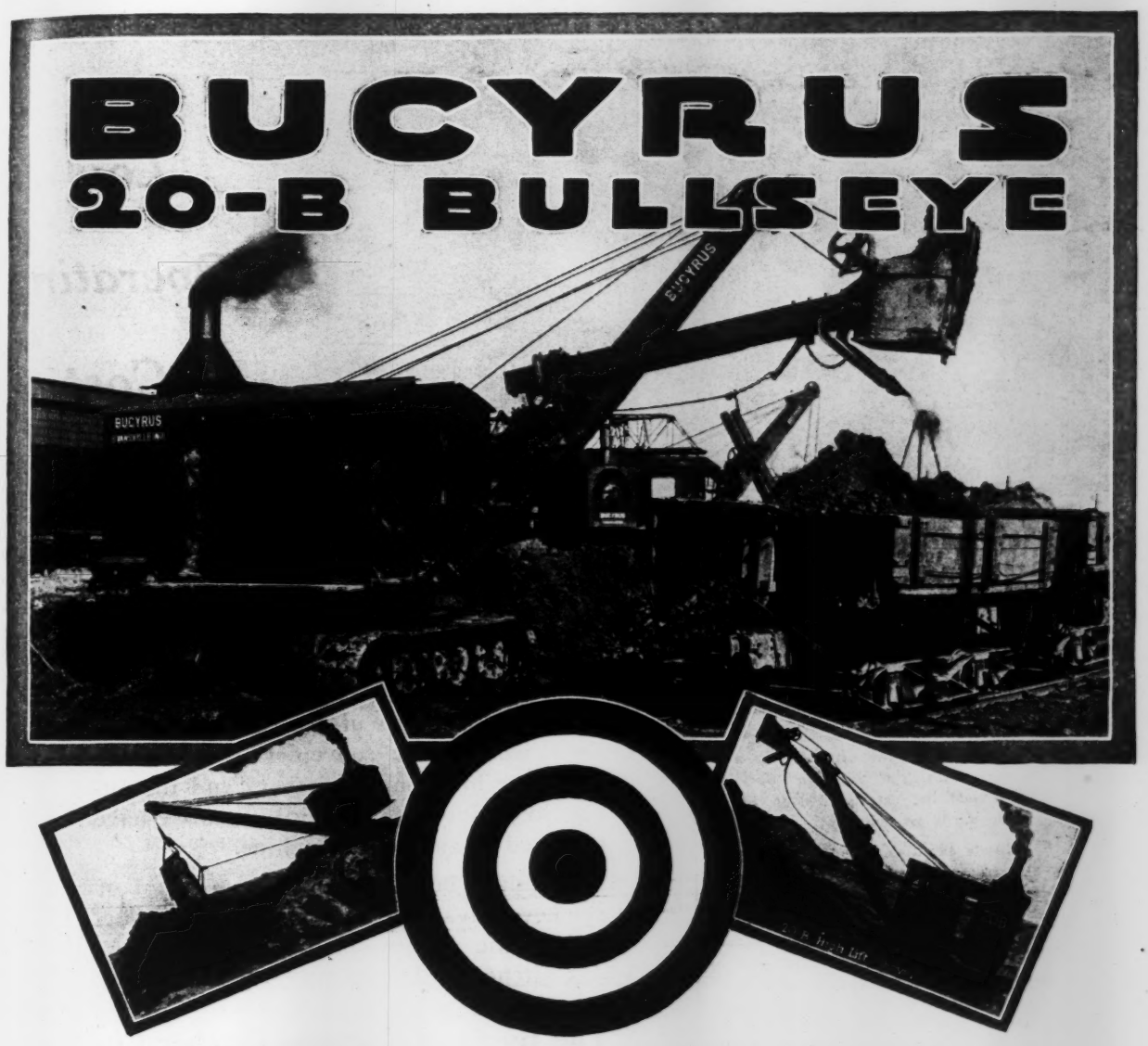
Of course extraordinary range isn't always needed but it's never a disadvantage. With the shovel down in a hole and the trucks on the bank, a good long reach sure comes in handy.

Contractors who know that greater shovel range means increased shovel efficiency and larger actual profits have enjoyed reading Bulletin 111. Write for YOUR copy.

THE THEW SHOVEL COMPANY, LORAIN, O.

Thew
Power Shovels

BUCYRUS
20-B BULLSEYE



A NEW ¾-YARD SHOVEL

This is the machine you have been looking for. A Shovel built for the Shovelman. In designing this machine no detail has been too small to neglect which would make it easier to operate and more convenient for the operator.

Powerful, strong, fast, snappy, and yet light. Thoroughly tested by months of operation, under the severest of conditions, before being put on the market.

BUCYRUS

ESTABLISHED IN 1880

RAILROAD TYPE AND REVOLVING SHOVELS OF ALL SIZES-DRAGLINE EXCAVATORS-TRENCH EXCAVATORS-DIPPER, HYDRAULIC AND PLACER DREDGES, SPREADER PLOWS, WRECKING CRANES, ETC.

A SPECIAL PLANT DEVOTED EXCLUSIVELY TO SMALL REVOLVING SHOVELS

BUCYRUS COMPANY, SOUTH MILWAUKEE, WIS.

NEW YORK CHICAGO BIRMINGHAM SAN FRANCISCO PORTLAND DENVER

433

Clip this Coupon and Mail to Nearest Office

BUCYRUS COMPANY: Date_____

Please mail me your Bulletin C-201, describing your 20-B UNIVERSAL SHOVEL.

Name_____

Address_____

N

Model C-20, Chain-and-Bucket type, has cutting widths of 40 in., 44 in. and 52 in.—digs any depth to 20 ft.

Low Operating Cost Plus

Aside from low operating cost, contractors often mention other reasons why they like their Buckeyes so well.

Take the East Side Realty Co. of Ashtabula, Ohio, for example. A feature of the Buckeye that particularly pleases them in their work is its convenience in moving from one location to another "and the setting in position more rapidly than we have observed in any other machine."

We shall be glad to send you proof of Buckeye advantages. Why not avail yourself of the profits possible with this low cost ditcher?

You can get the dirt back in a hurry with the Buckeye Back-Filler—at the rate of 100 to 125 cubic yards an hour.

Made small enough for working in streets and cramped places, this new Buckeye Back-Filler meets a long felt need. It is built with power-swinging boom like the larger Buckeye Back-Filler and possesses that same dependability characteristic of all Buckeye equipment. Ask for circular.

The Buckeye Traction Ditcher Co.

Manufacturers of Trench Excavators (both Wheel and Chain-and-Bucket Types), Concrete Breakers, Pipe-Line Trench Excavators, Tile and Open Ditchers, Back-Fillers, Pipe-Screwing Machines, Curb Diggers and Clay Diggers.

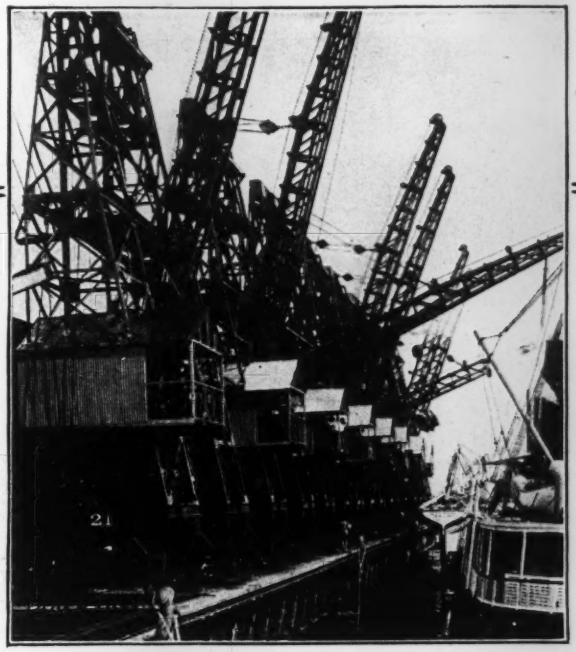
Findlay, Ohio

BRANCH SALES OFFICES:

New York, San Francisco, Tulsa, Okla., Miami, Fla., Chatham, Ont., Chicago, Los Angeles, Norfolk, Va., Mason City, Ia., Salt Lake City

Immediate Shipment

Buckeye



What an opportunity for rust!

Steel—tons of it—air and moisture—here are all the necessary ingredients. It would not take long for corrosion to put one or all of these derricks out of service if they were not properly protected. But the rusting of steel can be prevented by careful painting with red-lead. It is the standard paint for protecting structural metal.

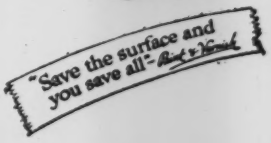
Dutch Boy Red-Lead is a pure red-lead that sticks tight to clean metal surfaces and keeps out moisture and harmful gases. It is particularly essential wherever there are framing connections, joined surfaces and rivet heads—spots that are concealed after erection.

Dutch Boy Red-Lead is an economical paint because of its great spreading power. It gives a uniform coating that is tough and elastic under all weather conditions.

As it is so fine and highly oxidized, we are able to supply Dutch Boy Red-Lead in both paste form and as a liquid. For application next to the surface the straight red-lead is used. In the liquid form it can be obtained tinted to light and dark brown, light and dark green and black.

Use Dutch Boy Red-Lead and don't give rust an opportunity to weaken your steel work.

Ask for Painting Helps No. 5.

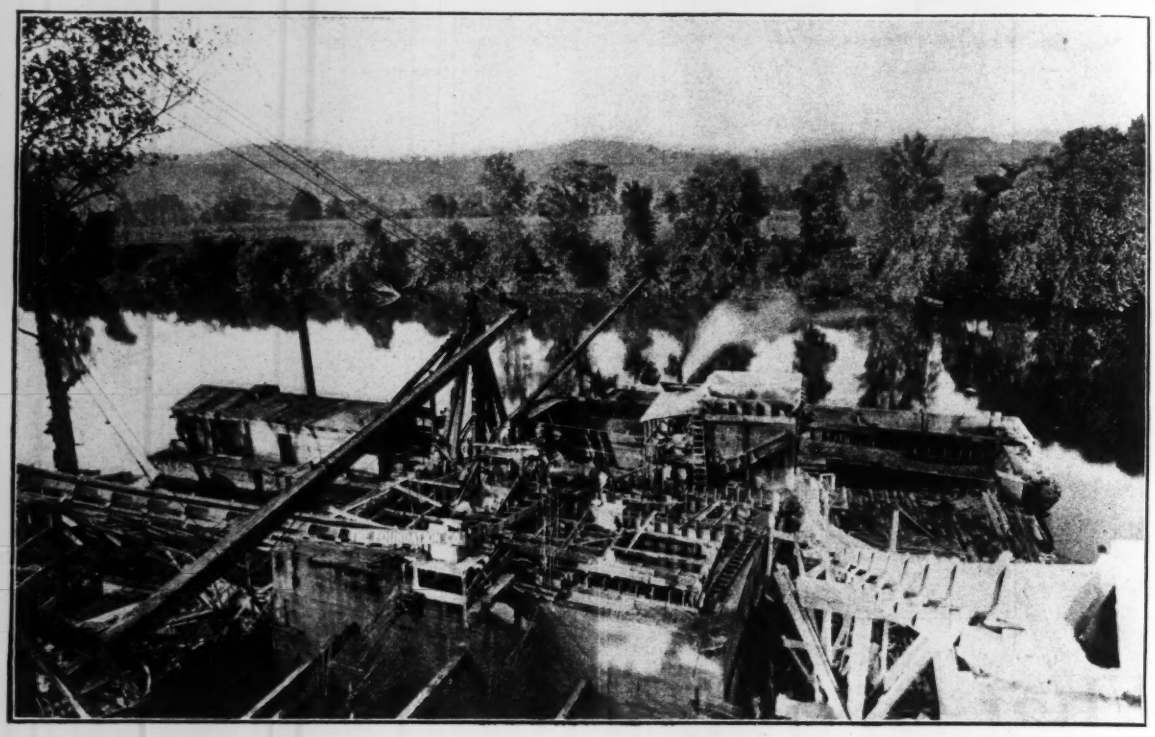


NATIONAL LEAD COMPANY

New York Boston Chicago San Francisco
Cleveland Buffalo Cincinnati St. Louis

JOHN T. LEWIS & BROS. CO., Philadelphia NATIONAL LEAD & OIL CO., Pittsburgh

Dutch Boy Red-Lead



Intake for the Rollin Chemical Company, Charleston, West Virginia
The Foundation Company, General Contractors

THE Foundation Company has had extensive experience in building Water-works, Filtration Plants, Sewage Disposal Systems and Pipe Lines, and is especially qualified to undertake engineering construction demanding extraordinary skill, unusual plant or rigid economy. The nearest district office will gladly co-operate with you.

THE FOUNDATION COMPANY

CITY OF NEW YORK

Industrial Plants
Office Buildings
Warehouses
Railroads and Terminals
Foundations and Underpinning
Filtration and Sewage Plants

ATLANTA
NEW ORLEANS
CHICAGO
PITTSBURGH
DETROIT

SAN FRANCISCO
LOS ANGELES
PHOENIX
PORTLAND, ORE.
MONTREAL, CANADA

LONDON, ENGLAND
PARIS, FRANCE
LIMA, PERU
HAVANA, CUBA
TAMPICO, MEXICO

Hydro-Electric Developments
Power Houses
Highways
River and Harbor Developments
Bridges and Bridge Piers
Mine Shafts and Tunnels

BUILDERS OF SUPERSTRUCTURES AS WELL AS SUBSTRUCTURES

Use IR Portable Compressors

"PAVING BREAKERS" and I-R PORTABLE COMPRESSORS enlarging manhole.

COMPRESSED-AIR operating machinery is being used to a greater extent every day for cutting asphalt, breaking out concrete, drilling rock, sand-blasting, paint spraying, etc. It does the work rapidly and economically, is comfortable to operate and sturdy.

"PAVING BREAKER"—a light compressed-air operated one man machine for cutting asphalt, breaking up concrete roads and foundations and general demolition work. The compressed-air method does the work in 1/4 the time at 1/3 the cost of hand methods.

"JACKHAMER"—an automatically rotated hammer type rock drill, hand held or mounted and used in all kinds of general rock drilling work. It is operated by one man and is now the standard drill for road and contract work.

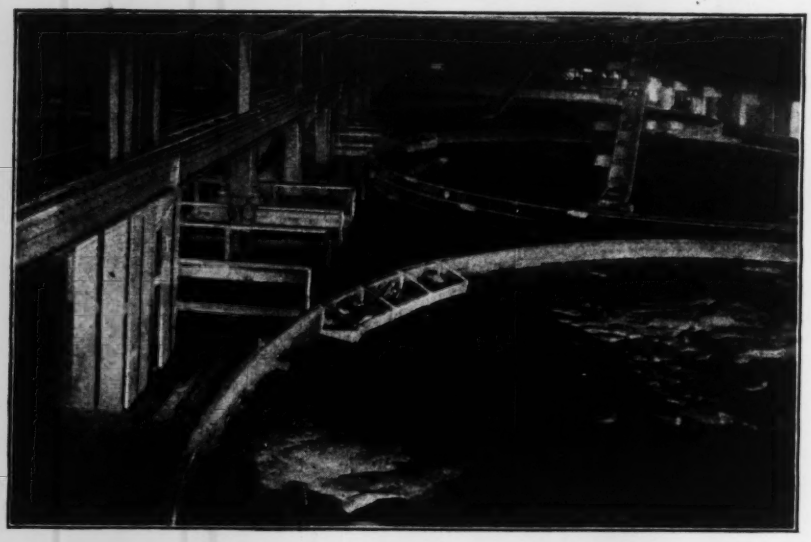
PORTABLE COMPRESSORS — complete air compressor plant consisting of: air compressor, gasoline engine or electric motor, radiator and cooling system, air receiver, etc., all mounted on a substantial all-steel truck with steel wheels and axles.

Bulletin No. 4051—Paving Breakers
Bulletin No. 4046—"Jackhamers"
Bulletin No. 3315—Portable Compressors

INGERSOLL-RAND COMPANY, 11 Broadway, New York

60-SD

Ingersoll-Rand



Redwood tanks at the Anaconda Copper Mining Company plant used for leaching copper. Uninjured by constant contact with caustic solutions.

Uninjured by constant contact with caustic solutions

LEACHING copper ore is only one of the departments of engineering in which Redwood has proved its special fitness as material for tanks that must stand up under the most severe service conditions.

In tanning factories and textile mills, for the hot solutions of acids and alkalies used in soap making, in milk condensaries and cheese factories, for holding hot and cold water, or solutions for a wide range of uses in chemical engineering, Redwood has proved its endurance in hundreds of instances. East and West, North and South, Redwood has won preference.

A *natural,* odorless preservative permeates Redwood fibre during the growth of the tree and protects it against all forms of fungus growth, boring worms and insects, and against the destructive action of moisture, acids and alkalies.

Properly seasoned, Redwood will not warp, swell or shrink and can be supplied free from defects in any necessary dimensions. Redwood tanks stay tight and last for years.

For all purposes where exposure to moisture, weather, acids or alkalies is a continuing condition Redwood excels in endurance.

In every industrial center are established tank manufacturers prepared to give immediate prices and service in the erection of Redwood tanks.

The various engineering uses for Redwood are illustrated and fully described on our pages in the sixth annual edition of the Chemical Engineering Catalog and in the Eighth Annual Edition of Sweet's Engineering Catalog. Write our Chicago or New York office for copies of our "Construction Digest" and our "Engineering Digest."

The Pacific Lumber Co. of Illinois
Chicago, 2077 McCormick Bldg. New York, 828 Rector St. Bldg.

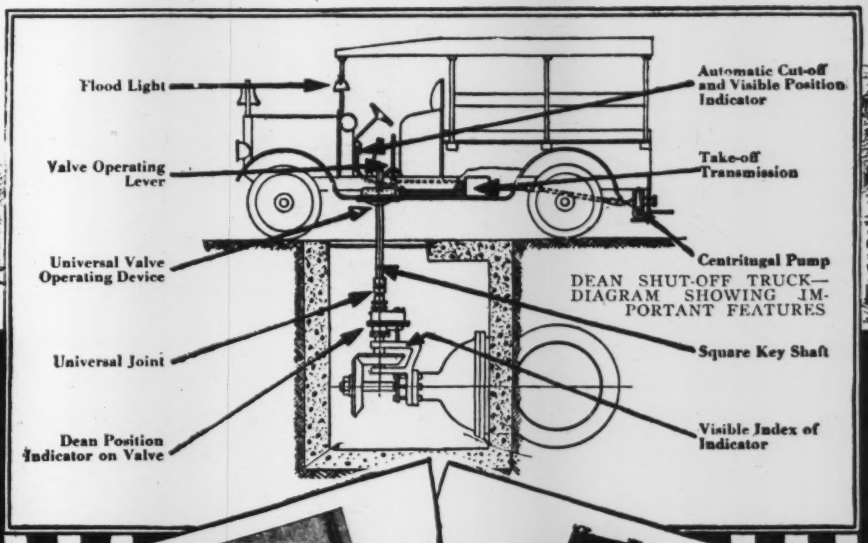
The Pacific Lumber Co.
San Francisco, 311 California St. Los Angeles, Central Bldg., 6th and Main Sts.

Export Company: A. F. THANE & CO.
40 Rector St., New York 311 California St., San Francisco

Our extensive re-manufacturing operations provide a large supply of short, knot-free Redwood 1 in., 1¼ in., 1½ in. and 2 in. thick and 3 in. to 6 in. wide. For trays, stock boxes, tool boxes, small vats and wood specialties, this high-grade Redwood is ideal. Our prices are decidedly attractive. Full particulars furnished on request.

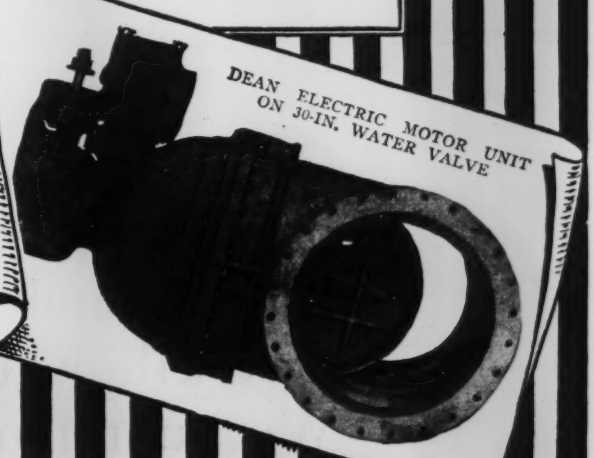
The Pacific Lumber Co.
Redwood
The Largest Manufacturers and Distributors of California Redwood

MOTOR OPERATION
OF LARGE WATER VALVES



DEAN SHUT-OFF TRUCK—DIAGRAM SHOWING IMPORTANT FEATURES

DEAN SHUT-OFF TRUCK IN OPERATION



DEAN ELECTRIC MOTOR UNIT ON 30-IN. WATER VALVE

WRITE FOR BULLETINS 43-55-100

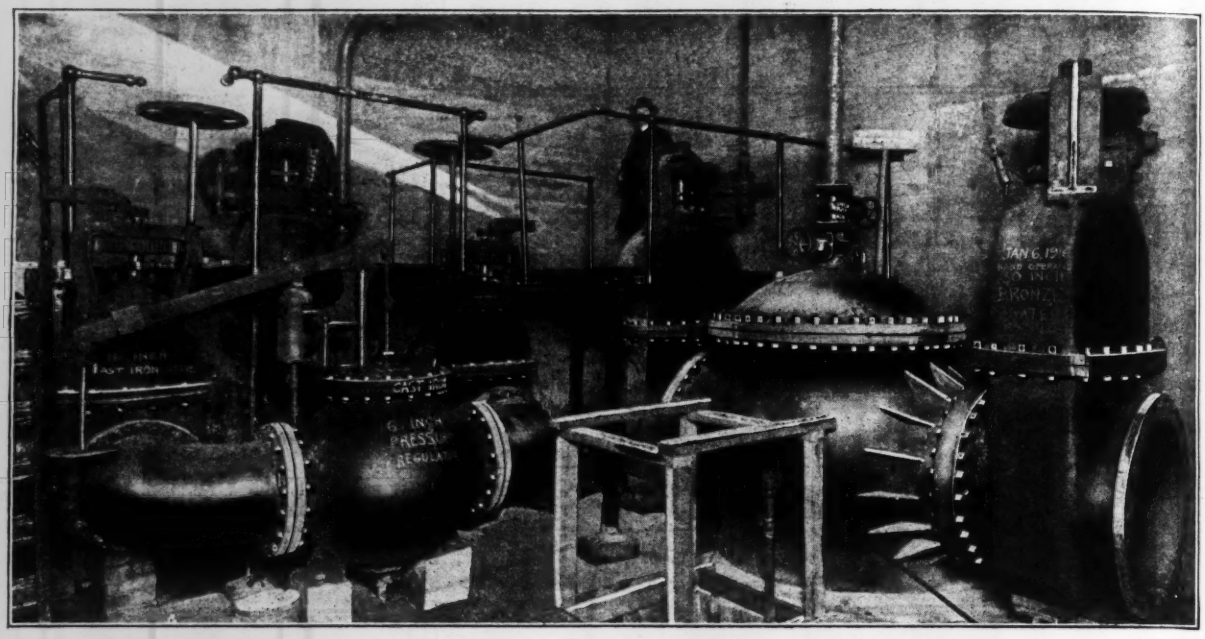
PAYNE DEAN LIMITED

STAMFORD, CONN.

PITTSBURGH. NEW YORK. CHICAGO.

COFFIN VALVE COMPANY,

Makers of the Largest Sluice and Gate Valves in America.



Coffin products predominate on big work — witness this Gate Chamber in one of the Catskill Aqueduct Shafts. We built four of the six big valves here shown for the N. Y. Board of Water Supply.

Check Valves
Flap Valves
Foot Valves
Sewer Gates

Office and Works: Neponset, Suburb of

BOSTON, MASS.,

Sluice Gates
Gate Valves
Butterfly Valves
Fire Hydrants

REPRESENTATIVES:

New York City: C. W. Bergen & Co., 50 Church St.
Cleveland, Ohio: Tomlinson Steam Specialty Co., 1597 St. Clair Ave.
Chicago, Ill.: Whitney & Ford, 4325 Cottage Grove Ave.
Philadelphia, Pa.: DeHuff & Hopkins, Morris Building
San Francisco, Cal.: Theo F. Dredge, Monadnock Building
Toronto, Ont., The Arthur S. Leitch Co., Ltd., 1001 Kent Building

Look at it from a Revenue Viewpoint!

GOLDEN-ANDERSON

Automatic Cushioned Controlling Altitude Valves

Save the water that you spend good money to store and to pump, and that you depend upon to bring the revenue to your system. Meter your lines, by all means—but check the overflow that wastes water *before it turns the meter dials.*

GOLDEN-ANDERSON Automatic Cushioned Controlling Altitude Valves automatically maintain Uniform Stage of Water in Tank, Reservoir, or Standpipes. They do away with the annoyances of Freezing and Float Fixtures inside or outside of Tanks.

"Three Ways of Closing These Valves."

1st Automatically, by Water.
2nd By Electricity, if Desired.
3rd. By Hand.

May also be arranged to automatically close when a break occurs in the mains. When necessary they may be so constructed as to "work both ways" on a single line of pipe.

No valves or fixtures inside or outside.
Sizes to 30 inches.

"Hosts of References"

Valves cushioned at all times by air and water

No water hammer or bursting mains

"Made with 'stop starter' attachment for Centrifugal pumps"

For Fire Service

Golden-Anderson Cushioned Electric Water Service Valves

No waste of current as it is only on solenoid a few seconds on either opening or closing of valve.

May be closed and opened from remote points electrically; also hand operated.

Air and water cushioned No metal - to - metal seats. Virtually indestructible.

Sizes to 30 in.

Golden-Anderson Automatic Cushioned Water Regulating Valves

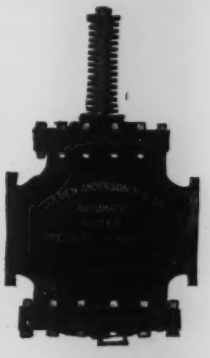
for high or low pressure service are a *necessity* for modern waterworks and railroads.

Positive in action and perfectly cushioned both in opening and closing.

Will maintain a constant pressure regardless of the volume of the initial flow.

When fitted with electrical attachment, valve can be instantly opened to full area from any number of distant points, thus insuring full pressure in case of fire, etc.

Sizes to 30 in.



Golden-Anderson

Patent Automatic Double Cushioned Check Valve

Automatically prevents reverse flow of pressure. Perfectly cushioned to prevent shock or hammer.

Especially adapted for water works to prevent disastrous reverse flow of pressure due to pumps stopping.

Arranged so that quick or slow operations may be obtained.

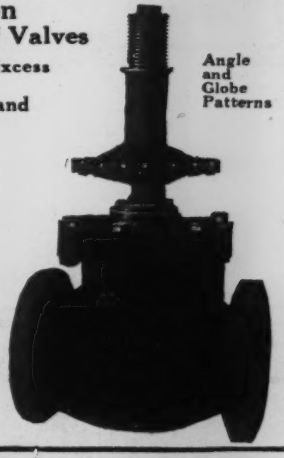
Sizes to 30 in.
Angle or Globe

Golden-Anderson Cushioned Water Relief Valves

Automatically Relieve Excess Pressure—
Prevent Stress, Strain and Bursting Mains

Essentials of a durable economic and reliable relief valve are first-class material and workmanship, correct mechanical construction and operation, with no metal-to-metal seats and perfect air and water cushioning to avoid shock or hammer on the various pressures, all of which are contained in the Golden - Anderson Patent Automatic Cushioned Water Relief Valve.

Sizes to 30 in.



Angle and Globe Patterns

Golden-Anderson Valve Specialty Co., 1202 Fulton Bldg., Pittsburgh, Pa.

Coal and Ashes Handling Simplified

YOU can make the work of delivery of coal to your boilers and disposing of the ashes one of the easiest tasks in your power plant, and at the same time reduce the expense to a minimum.

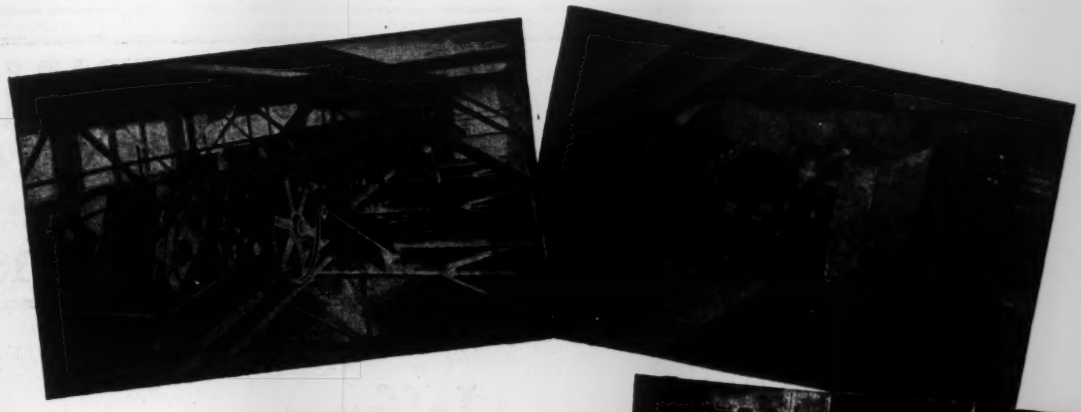
Handle them with Webster Conveyors, and combine the advantages which mechanical handling affords with the further advantages accruing through the general serviceability and low cost of operation and maintenance of Webster equipment.

We make all types of equipment for coal and ashes handling from the highly perfected Perkins Pivoted Bucket Carrier to the simplest flight or belt conveyor. Ask for one of our engineers to look over your present handling methods.

THE WEBSTER MFG. COMPANY

4500-4560 CORTLAND ST., CHICAGO

Factories-Tiffin, O. *and* Chicago – Sales Offices *in* Principal Cities



Some of the Advantages of the Jeffrey Standard Scraper Conveyer

Simplicity—It does not consist of much machinery and does not require much wood or steel for support.

With timber supports it may be quickly installed as a temporary or permanent equipment in power house extensions.

Can be readily inspected. Consists of no complicated parts either in steel chains or its Scrapers.

Wide range of service from one conveyer. May be installed on the horizontal, on an incline, or as a combination in one conveyer of both horizontal and incline or of two inclines, with the joining connection between the horizontal and incline or the two inclines being made in a curve of large radius.

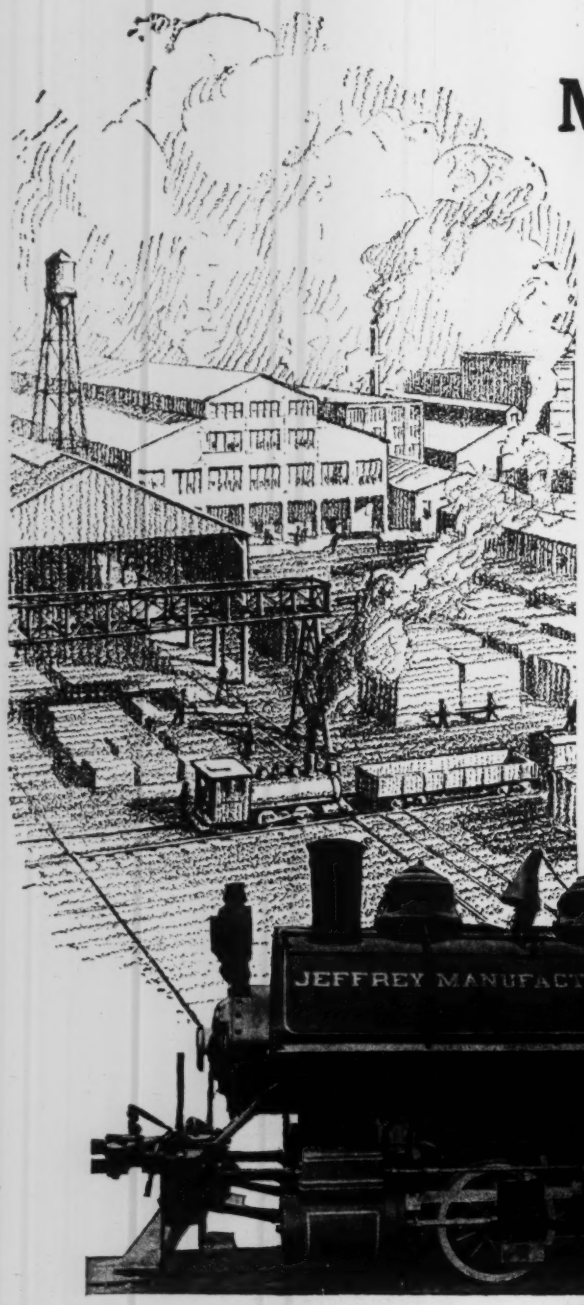
Low upkeep and ease of repair.

Write for Catalog No. 257-H on Jeffrey Standard Scraper Conveyers.

The Jeffrey Manufacturing Co.
923-99 North Fourth Street, Columbus, Ohio

JEFFREY
MATERIAL HANDLING MACHINERY

VULCAN INDUSTRIAL LOCOMOTIVES and leading Industrial Concerns



Jeffrey Manufacturing Co.

A CONCERN that builds heavy machinery such as the Jeffrey Manufacturing Company surely is fully informed on the essentials of an industrial locomotive. They know the kind of handling and the kind of work such an engine is up against. Naturally they turn to a builder who, like themselves, have the experience and a reputation for building machinery that stands up under such conditions.

Men long on locomotive design are ready to serve you in determining your requirements.

VULCAN IRON WORKS

Established 1849

1737 Main Street Wilkes-Barre, Pa.

The Volume Factor

The LINDE business, which is the largest of its kind in the world, has been built upon the policy of sharing with its patrons the fruits of their patronage.

Every contract placed with LINDE helps to secure to oxygen users the country over the benefits in price and service accruing from greater volume.

The eighty LINDE Plants and Warehouses now in operation are convincing proof of the soundness of this principle.

A LINDE contract is an insurance policy—it insures a perfect product and a perfect service at an exceptionally favorable price.

No oxygen user, large or small, should close an arrangement for oxygen supply without first securing 1922 prices from the nearest LINDE District Sales Office.

[Nation-wide chain of 30 plants and 50 warehouses]

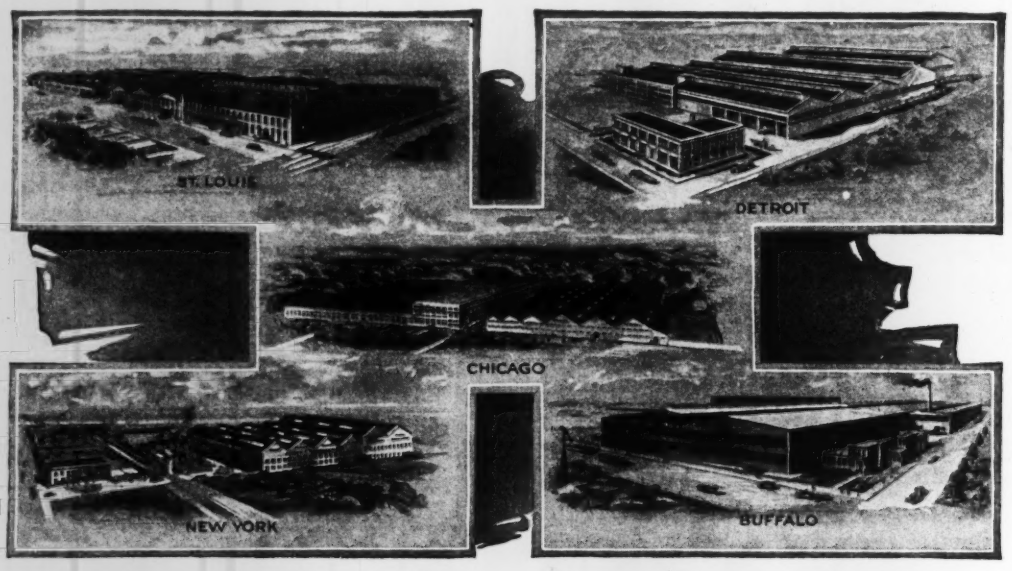
THE LINDE AIR PRODUCTS COMPANY

Carbide and Carbon Building, 30 East 42nd Street, New York

District Sales Offices in these cities: *Atlanta, Boston, Buffalo, Chicago, Cleveland, Dallas, Detroit, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco*

THE LARGEST PRODUCER OF OXYGEN IN THE WORLD

1206-22



Your Source for Steel

FIVE great plants are shipping steel every day throughout the United States and Canada. In most cases the steel is loaded and on its way within a few hours after instructions are received.

On direct wires comes an order from Nogales, Arizona, for tank plates to go to a mining camp in Mexico. A manufacturer in San Diego needs some cold rolled bars of a certain size. A contractor in Kokomo wires for some reinforcing bars needed to complete a penalty contract. From Toronto comes a call for a carload of flats. These from the countless orders of a single day.

No matter where you are located, Ryerson Steel-Service can furnish the steel you need at once. Call on the plant nearest you.

Write for Ryerson Journal and Stock List—the key to Immediate Steel.

ESTABLISHED 1842 INCORPORATED 1888

JOSEPH T. RYERSON & SON

CHICAGO ST. LOUIS DETROIT BUFFALO NEW YORK

BRANCH OFFICES
MILWAUKEE DENVER MINNEAPOLIS HOUSTON NEWARK JERSEY CITY SAN FRANCISCO

RYERSON STEEL-SERVICE

HOISTS DERRICKS

ELECTRIC HOIST AND DERRICK $1700

Price F.O.B. Cars, Hog Island, Pa.

You Save at Least $2000

These Hoists and Derricks are standard late models, manufactured by The American Hoist & Derrick Co., St. Paul, Minn. They are almost new, and every one is GUARANTEED to be in first-class running order.

DIMENSIONS OF DERRICKS

Mast.....16 in. square, 40 ft. high.

Boom.....Made of (2) 14 in. sq. timber 48 ft. long spliced to lengths of 80 ft. with (2) ⅞ in. and (2) 1⅛ in. truss rods.

Stiff Legs..14 in. sq., 62 ft. long or 16 in. sq., 50 ft. long, will furnish either length desired, capacity 5 to 12 tons. Bull wheel 16 ft. dia. Principal sheaves 16 in. dia. and 14 in. single blocks.

The Cable which was formerly used will be given with each purchase of a Hoist and Derrick.

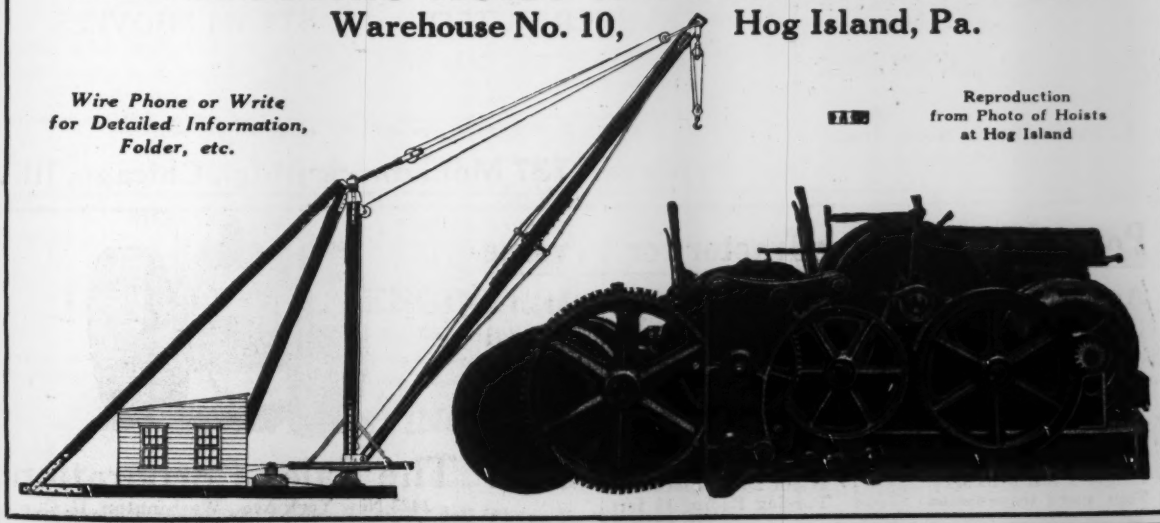
The Hoists have two drums and swingers, and are complete with Starting and Control Equipment. The MOTORS are Otis A. C., 60 cycle, 3 phase, 440 volt, slip-ring induction type and, if desired, may be changed to suit the individual current requirements of purchasers at cost.

These Hoists and Derricks are assembled on the Grounds at Hog Island and may be inspected at any time. This Equipment is being sold complete and in units of a Hoist or Derrick if desired. Immediate shipment can be made anywhere, but QUICK ACTION IS IMPERATIVE.

THE ELECTRIC HOIST & DERRICK COMPANY

Warehouse No. 10, Hog Island, Pa.

Wire Phone or Write for Detailed Information, Folder, etc.



Reproduction from Photo of Hoists at Hog Island

"WE BUY—REBUILD—SELL—OR RENT"

All the Equipment listed below is owned by us and may be inspected at one of our own warehouses.

CONCRETE MIXERS

45—Concrete Mixers. Sizes 28S, cap. 1 yd.; 21S, cap. ¾ yd.; 14S, cap. ½ yd., and 10S, cap. 1/3 yd. With steam or electric power; with side loaders or batch hoppers. Following makes: Marsh-Capron, Koehring, Milwaukee, Ransome, Smith, Smith-Chicago, Rex, Lakewood, Foote, Cube, or Oshkosh.
20—7S, capacity 1 bag, with low charging platforms, with gasoline engines.

CARS

20—Western 4-yd., 36-in. Gauge Dump Cars.
20—Koppel, steel, V-shape, 10-36-in. gauge, 10 24-in. gauge; capacity 1½ yd.
15—Flat Cars; 24-in. gauge, platform, 38 in. 72 in.; capacity, 4 tons.

CRANES

3—Byers Auto Cranes on traction wheels, with 30-ft. boom, with ½ or ¾-yd. clam shell buckets.
1—15-ton, 8-wheel O. & S.; 40-ft. boom.
1—O. & S. Full Revolving Crane; traction wheels; steam, ¾-yd. bucket.

DERRICKS

8—Stiff-Leg Derricks, with booms ranging from 50 to 75 ft.; mast legs and sills in proportion, for handling ½, ¾ or 1-yd. buckets.

CLAM SHELL BUCKETS

26—Clam shell buckets. Sizes ½, ¾, 1, 1½, or 2 yd. All makes.

ROAD ROLLERS

3—Erie Tandem, 1-7 ton, 1-3 ton, 1-5 ton.
1—New Huber 10-ton, 3-wheel steam.
2—Kelly-Springfield, 10-ton, 3-wheel; 1 gas; 1 steam.
1—Iroquois, 5-ton, steam Tandem.
5—10-ton, 3-wheel, 3 Buffalo-Pitts, steam, 1 Iroquois, steam. 1 Austin Gas.

TRENCHING MACHINE

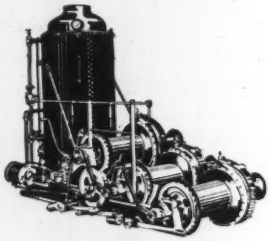
1—Buckeye type, gasoline; size No. 3.

STEAM SHOVELS

1—Type B Erie, on traction wheels, with high lift boom, with ¾-yd. dipper.
1—Bucyrus, 70-ton, on MCB standard gauge trucks, with 2½-yd. dipper.
2—Keystone Excavators; 1—No. 3; 1—No. 6, with clamshell boom.
1—Type O Thew ¾-yd. bucket.
1—Marion No. 31, 1-yd. dipper.

We carry a complete line of Boilers, Compressors, Cars, Engines, Elevators, Hoppers, Steam Hammers, Rollers, Pumps, Spouting and Portable Track.

Write or wire your requirements.



HOISTS

24—Three-drum Hoists, with or without boilers. Sizes 10 x 12, 9 x 10, 8¼ x 10, and 7 x 10 with separate swingers for derrick work. All makes.
30—Two-drum Hoists, with or without boilers. Sizes 10 x 12, 9 x 10, 8¼ x 10, 7 x 10, 6¼ x 10, 6 x 8, and 5 x 8. Can be equipped with holding drum for bucket work. Several special Cableway Excavator or Drag Scraper Hoists. All makes.
6—Gasoline Hoists, Single and Double Drum, 6, 10, and 15 hp. engines.
6—Swinging Engines.

LOCOMOTIVES

1—Davenport, 18-ton; 36-in. gauge; steam saddle tank.
2—Davenports, 24-in. gauge, steam, 7 tons.
1—Shay, geared, 13-ton, 36-gauge, steam.
5—Whitcomb, gasoline, 36-in. gauge, 2-4 ton, 3-8-ton.

RAIL AND TRACK

3 miles, 24-in. Gauge Portable track with steel ties, made up of 20-lb. rail with switches.
100-Ton, 20-lb. Rail.

EQUIPMENT CORPORATION *of* AMERICA

PITTSBURGH, 855 Empire Bldg.
Phone, Smithfield 1502

CHICAGO: 1455 Lumber Exch.
Phone, Randolph 6586

PHILADELPHIA: 655 Land Title Bldg.
Phone, Spruce 5498

Air Compressors

In Stock, Immediate Delivery

1—22-in. and 44-in. x 25½-in. x 40-in. x 36-in. Ingersoll-Rand, (steam); capacity 2715 cu. ft.
1—18-in. x 20¼-in. x 13¼-in. x 18-in. Ingersoll-Rand (steam); capacity 1115 cu. ft.
1—20-in. x 12½-in. x 16-in. Sullivan (belt); capacity 873 cu. ft.
1—12-in. x 12-in. x 12-in. Chicago Pneumatic (steam); capacity 361 cu. ft.
1—12-in. x 7½-in. x 10-in. Rand (motor); capacity 249 cu. ft.
1—9½-in. x 13-in. x 10-in. Westinghouse Air Brake (steam); capacity 92 cu. ft.
1—8-in. x 7½-in. x 9-in. Westinghouse Air Brake (steam).

Also a large stock of Hoisting Engines, Boilers, Centrifugal Pumps, Rock Crushers, Concrete Mixers, etc.

L. F. Seyfert's Sons, Inc.
437 N. 3d St., Philadelphia, Pa.

FOR SALE

LOCOMOTIVE CRANES

1—McMyler 15-ton, 8-wheel, M.C.B.; single line, 40-ft. boom, low price.
1—15 ton O. & S.; 8-wheel, M.C.B.; 70-ft. boom, with 25 ft. removable section; double power driven drums; also drag-line attachments, equipped with outriggers.

ASPHALT PLANT

1—Iroquois 800-yd. Road Asphalt Plant; complete.

CRUSHER OUTFIT

1—Gates, 18-K; Gates 60 in. x 20 ft. revolving screens; 42-in. bucket elevator; 80-ft. centers.

NEW TRACTION CRANES

Full Revolving Road Cranes; 7-ton capacity, with ¾-yd. bucket.

LOCOMOTIVE

American 6-wheel Switcher. Cylinders 18 x 24-in., drivers 44 in., wheel base 11 ft. 6 in., weight 60 tons.

ROAD ROLLER

1—Kelly-Springfield. 10-ton, 3-wheel, double cylinder, steam road roller.

STEAM SHOVELS

1—Marion, Model 31; 1-yd. dipper; caterpillar traction.
1—Marion, Model 28; ⅝-yd. dipper; Shop No. 3328.

We carry in stock concrete mixers, air compressors, road rollers, hoisting engines, boilers, buckets, pipes, cars and other equipment and machinery.

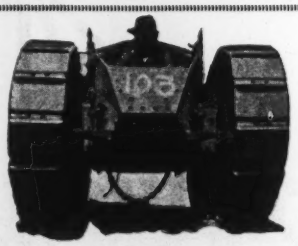
F. Mayer, 737 Monadnock Bldg., Chicago, Ill.

Powerful Caterpillar Tractor for ¼ value

An exceptional purchase from the Government of a limited number allows us to offer this exceptional value while they last.

Specifications

Weight 6 tons
Length 13 feet
Height 5 feet 6 inches
Four speed transmission
Forty horsepower at 1300 rpm.
Drawbar Pull 6 tons
Width 5 feet 9 inches
Turning Radius 13 feet



The Sales Corporation
1423 New York Ave., Washington, D. C.

CRANES

1—23-ton, 8-wheel McMyler, Double Drum, 50-ft. Boom.
1—15-ton, 8-wheel Industrial Double Drum, 45-ft. Boom.
1—15-ton, 8-wheel Brownhoist, Double Drum, 41-ft. Boom.
1—15-ton, 8-wheel Brownhoist, Single Drum, 41-ft. Boom.
1—75-ton, Industrial Wrecking Crane.

STEAM SHOVELS

1—Type B, Erie, Traction Wheels, ¾-yd. Dipper.
1—14-B Bucyrus, Traction Wheels, ¾-yd. Dipper.
2—18-B Bucyrus, Traction Wheels, 1⅛-yd. Dipper.
1—35-B Revolving Bucyrus, 1½-yd. Dipper.
1—55-ton. Std. Gauge, Bucyrus, 2-yd. Dipper.
1—70-C Bucyrus, 2½-yd. Dipper.

DRAGLINE EXCAVATORS

2—Class 24, late design Bucyrus, 100-ft. Booms, 3½-yd. Buckets.

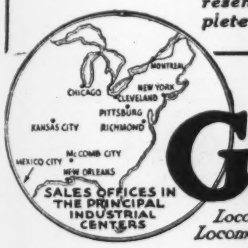
DUMP CARS

16—12-yd. Std. Gauge, Western, 2-way Air Dump Car.
30—4-yd. 36-in. Gauge, Western, Heavy Duty Dump Cars.

CARS

25—40-ton capacity, 36-ft. Wooden Underframe Flat Cars.
16—40-ton capacity, 36-ft. Steel Underframe, Low Side Gondolas.
35—40-ton capacity, All Steel, Self-Clearing, Hopper Cars.
50—30-ton capacity, Standard Gauge Box Cars.

If you don't see what you want in this list, write us. These items represent only a fraction of our complete stock.



GENERAL EQUIPMENT COMPANY, INC.

Locomotives, Dinkies, Dump Cars, Steam Shovels, Draglines, Ditchers, Boilers, Locomotive Cranes, Flat Cars, Gondolas, Box Cars, Air Compressors, Coaches, Rail

This Company is really a sort of Super-Purchasing Agent

for Purchasing Agents. Its exclusive selling contracts with railroads, its relations with contractors who have equipment to dispose of and its widely separated offices are all at the disposal of the man who knows what he wants and wants to know that every dollar of his money is going farthest in getting it. And this applies to the smallest individual contractor as well as the Purchasing Agents of the greatest contracting organizations.

GENERAL EQUIPMENT COMPANY, Inc.
30 Church Street, NEW YORK CITY

CHICAGO, ILL. Peoples Gas Bldg.
CLEVELAND, OHIO Ulmer Bldg.
PITTSBURGH, PA Oliver Bldg.
RICHMOND, VA. Va. Railway and Power Bldg.
NEW ORLEANS, LA. Maison Blanche Annex
KANSAS CITY, MO. Triangle Bldg. Gilham Road
MEXICO CITY MEXICO Edificio La Mutua
MONTREAL CANADA 285 Beaver Hall Hill
McCOMB CITY, MISS.

Exceptional High Grade Equipment at Exceptionally Low Prices

PUMPS

American Well Works Centrifugal Pumps.

4—Size 1 — 27 g.p.m.
5—Size ½— 70 g.p.m.
3—Size 2 — 70 g.p.m.
2—Size 3½—350 g.p.m.
1—Size 5 —750 g.p.m.
3—Size 5 —700 g.p.m., 2-stage, 185-ft. head.
All the above with bases and couplings.
4—Size 5—4 in. with base and pulleys.
1—No. 4 Platt, 4 in. suction, 3 in. discharge, single stage, D.S. Centrifugal on base, direct-connected to Terry steam turbine, 420 g.p.m., 40-ft. head.
1—7 in. x 4½ in. x 8 in. Advance Duplex Pattern Steam Pump.
2—Keystone Deep Well Pumps, Nos. 33 and 34—double strike geared pump head.

MOTORS

3—22 hp. G. E. Form M, 3 ph., 60 cy., 220 v., 720 r.p.m.
1—25 hp. Western Electric 900 r.p.m., 3 ph., 60 cy., 220 v.
1—75 hp. General Electric Form L, 900 r.p.m., 3 ph., 60 cy., 220 v.
5—100 hp. G. E. Form L, 720 r.p.m., 3 ph., 60 cy., 220 v.

NEW CAR WHEELS

700—Car Wheels, "Star Brand," self-oiling, 12 in. diam. tread to tread, 2 in. bore, chilled tread.

HOISTS

1—Flory Single Friction, direct-connected to 35 hp., 3 ph., 60 cy., 220 v. motor.
1—Lidgerwood Steam Hoisting Engine, double cylinder, double drum, with boiler and foot brakes.

BOILERS

1—60 hp. Economic, 100 lb.
1—50 hp. Kewanee Fire Box, 100 lb.
1—35 hp. Economic, 100 lb.

THE MARKMAN ENGINEERING CO.
111 W. Monroe St., Chicago, Ill.

ROAD ROLLERS

1—10-ton, 3-wheel, Buffalo-Pitts, double cylinder, steam.
1—10-ton, 3-wheel Kelly-Springfield, double cylinder, gasoline.
1—10-ton, 3-wheel Kelly-Springfield, double cylinder, steam.
1—10-ton, 3-wheel J. I. Case, Steam.
1—8-ton, tandem Kelly-Springfield, steam.
1—6-ton, tandem Kelly-Springfield, steam.
1—3-ton, tandem Kelly-Springfield, steam.

DERRICKS

1—60-ft. and one 50-ft. Stiff Leg Derrick, complete with bull wheel.

HOISTING ENGINES

1—New 9 x 10, D.C., 3-drum Clyde with A.S.M.E., boiler.
1—7 x 10, D.C., 3-drum Clyde, with boiler and boom swinger.
1—7 x 10, D.C., D.D. American, with boiler and boom swinger.
1—4¼ x 8, D.C., S.D.O.&S. with boiler.
1—9 x 12, D.C., 3-drum Flory, with 50 hp. firebox boiler.

MISCELLANEOUS

1—No. 0 **Thew Steam Shovel,** on traction wheels, with ¾-yd. dipper.
1—**Brownhoist Crane,** with 30-ft. boom and ¾-yd. clamshell bucket. On traction wheels.
12—Miles **Industrial Track,** 25-lb. rail, 24-in. gauge.
30—**Lakewood Batch Cars,** 24-in. gauge.
40—**Koppel Flat Cars** for handling Batch Cars.

Midwestern Company
140 South Dearborn St., Chicago, Ill.

FOR SALE

MUNDY HOISTING ENGINE

1—8 x 12, 32-hp. Double Cylinder, Double Friction Drum, with foot brakes, and A.S.M.E. Boiler. Engine No. 13230, Boiler No. 2186-B. Purchased April 15, 1922, for rush job, actually used 22 days. Engine in perfect condition. For further information write or call.

Tavistock Country Club, Tavistock, N. J., Bell 'Phone Haddonfield 1879.

ONE CUBIC YARD

Williams Clamshell Bucket

Just renewed, in fine condition, $325.00 f.o.b. Chicago.

JAMES B. SEAVERNS, Contractor
122 South Michigan Ave., Chicago, Ill.

CRANES

1—15-ton O. & S. Locomotive Crane, 8-wheel, M.C.B., 45-ft. boom, double drums, A.S.M.E. boiler.

1—Brownhoist, 15-ft. gauge, full revolving Crane, 4-wheel, 75-ft. boom, double drums, electrically operated, will handle 1½-yd., 2-yd. bucket. Operator's house mounted 20-ft. over crane.
This is an ideal crane for your dock for handling coal, sand, gravel or any bulk material.

1—30-ton O. & S. Locomotive Crane, 8-wheel, M.C.B., 75-ft. boom, double drums, 1919 Crane.

MISCELLANEOUS

1—Erie Steam Shovel, type B, ¾ yd., Traction wheels.

1—Osgood 18, ¾-yd. dipper, traction wheels.

1—35-hp. Electric Hoist, double drums and attached swinger.

1—75-hp. Electric Hoist, double drums, attached swinger and holding drum.

FORSYTHE BROTHERS
30 Church Street, New York City.

FOR SALE OR RENT

STEAM SHOVELS

1—70-C Bucyrus, Shop No. 1700; 2½-yd. dipper.

1—70-C Bucyrus, Shop No. 1376; 2½-yd. dipper.

1—70-ton Bucyrus, Shop No. 939; standard 70-C boom, 2½-yd. dipper.

1—65-ton Bucyrus, Shop No. 394; 2½-yd. dipper.

1—Model 76 Marion, Shop No. 2452; 4-yd. dipper.

1—18-B Bucyrus, full revolving steam Shovel, Shop No. 1475, traction wheels, ⅞-yd. dipper.

DUMP CARS

20—16-yd. Standard Gauge Western Air Dump Cars, steel underframes, box girder doors.

40—12-yd. Standard Gauge Western Dump Cars, steel underframes, 19-ft. beds, box girder doors.

40—4-yd. 36-in. Gauge Western Dump Cars.

1—Western 36-in. Gauge Spreader Car.

LOCOMOTIVES

2—Standard Gauge, 17 x 24 Cylinder, 6-wheeled Switching Locomotives, with separate tender; weight, 43 tons on drivers.

5—36-in. Gauge, 10 x 16 cylinder, Vulcan 4-wheel saddle tank locomotives, Shop Nos. 1226, 1364, 1453, 1456, 1461; weight 18 tons.

DRAGLINE EXCAVATORS

1—No. 2 Monighan Steam-Operated All-Steel Dragline; 60-ft. boom; 2-yd. Page bucket; mounted on skids and rollers.

1—Class 14 Bucyrus Dragline; 60-ft. boom; 2-yd. Page Bucket; skids and rollers.

MISCELLANEOUS

9—2-ton Kelly-Springfield Trucks, standard box bodies with removable sides.

60—Sets Standard Chain Tug Harness, with collars, brand new.

CLAPP, RILEY & HALL EQUIPMENT CO.
(Successors to Clapp, Norstrom & Riley Equipment Co.)
14 SO. CANAL ST., CHICAGO

Equipment For Sale or For Rent

STEAM SHOVELS

1—Erie, Type "B."

1—Bucyrus, 14-B, on caterpillar.

ROAD ROLLERS

2—10-ton Buffalo-Pitts.

2—5-ton Tandem Iroquois.

1—30-ton Browning Locomotive Crane.

1—21-E Foote Paving Mixer.

2—14 Koehring Pavers.

6—Wheel Scrapers.

2—18-ft. Lakewood Finishing Machines.

Crushers, Locomotives and Dump Cars.

Pittsburgh Machinery & Equipment Co.
1302 Fulton Bldg., Pittsburgh, Pa.

ROAD PLANT

Ready for service—at very attractive prices.

21-E Smith Paver, caterpillar, overhauled.
21-E Austin Paver, caterpillar, overhauled.
14-E Austin Paver, on wheels, rebuilt.
10-E Koehring Paver, on wheels, overhauled.
28—Marion Shovel, A.S.M.E. boiler, used very little, excellent for road work.
15-ton O & S Locomotive Crane, Massachusetts boiler, with bucket, ready for work.

Bucket Operating Derrick, 62-ft. boom, 8¼ x 10 Lidgerwood, Three-Drum Hoist, A.S.M.E. boiler, used three months.
Clam shell buckets, ½-yd. to 3-yd. sizes.
10-ton Buffalo-Pitts Macadam Roller, Massachusetts boiler, pressure scarifier.
144-cu. ft. Ingersoll-Rand Portable Compressor, gasoline driven.
Climax Portable Crushing Plant, including bin and power, 150 tons per day, used only few weeks.

Also Forms, Graders, Tractors, Pumps, Finishers—Everything for the Road Builder. Write for complete list.

THE HUBBARD-FLOYD CO., INC.
MAIN OFFICE: Grand Central Palace, New York, N. Y. Vanderbilt 1465.
BOSTON OFFICE: Old South Building, Main 4233.

SACRIFICED ! !

Two 5-Ton Garford Trucks
$875.00 Each

Equipped with Wood Automatic Hoists and Metal Dumper Bodies. All in good running order. These trucks were taken over by a bank and must be sold. Terms can be arranged if secured.

Fredk. Davis, 137 Broadway, New York City
Representing the Owner
Phone Rector 9560

Let George Do It!

FOR SALE OR RENT

Mixers	Saw Tables
Compressors	Hoists
Pumps	Derricks
Bucket	Concrete Chute
Conveyors	Towers

Complete line of Contractors' Equipment and Supplies.

Established 1873

E. GEORGE & CO., INC.
407-409 Broadway, New York City

AT SACRIFICED PRICES

Locomotive Cranes Boilers

1—15-Ton Brown Hoist, 8-wheel, M.C.B. bucket operating, 50-ft. boom, butt strapped boiler in excellent condition throughout.
1—Byers Auto Crane, traction wheels, 30-ft. boom, equipped with ¾-yd. clam shell bucket, has seen very little service.
1—20-Ton O. & S. 8-wheel, M.C.B., 50-ft. boom, bucket operating, separate engine and generator for magnet work, butt strapped boiler, in first-class condition throughout.
2—72 x 18, 150-hp., Horiz. Return Tubular Boilers, butt strap Mich. Standard, working pressure 120 lb., complete with necessary fittings.
2—66 x 16, 100-hp. Horiz. Return Tubular Boilers, butt strap and Mich. Standard, working pressure 110 lb., complete with necessary fittings.
5—250-hp. Wicker Vertical Water Tube Boilers, butt strap, Mich. Standard, working pressure 150 lb.
1—250-hp. McNaull Water Tube boiler, working pressure 150 lb. Mich. Standard, butt strap, complete with necessary fittings.

All the above equipment is owned by us, located in Detroit, available for immediate shipment. Send us your inquiries for contractors and power plant equipment.

AMERICAN MACHINERY & EQUIP. CO., 6970 W. Jefferson Ave., Detroit, Mich.

REAL EQUIPMENT

FOR SALE OR RENT

ROLLERS

2—Kelly-Springfield 10-ton Road Rollers.
1—Monarch 10-ton Road Roller.
1—Huber 10-ton Road Roller.
1—Monarch 12-ton Road Roller.
1—Erie Tandem Roller.

STEAM SHOVELS

1—Model 28 Marion ⅝ yd. Bucket Traction Steam Shovel.
3—Erie type "B" ¾ yd. Bucket Traction Steam Shovel.

PORTABLE TRACK

5—Miles of 24-in. gauge Koppel Portable Track, 20-lb. rail.

DUMP CARS

20—Koppel 24-in. gauge "V"-shape Dump Cars.

LOCOMOTIVE

1—24-in. gauge Vulcan, 4-driver saddle tank Steam Locomotive.

Send for our Bulletin of used equipment bargains. All equipment offered in stock our warehouse, all overhauled and guaranteed.

PHONE **WIRE** **WRITE**

Contractors Machinery & Supply Co.
318-20 Penn Ave., Pittsburgh, Pa.

FOR SALE

One BUCYRUS 18-B
Traction Revolving

Steam Shovel

⅞-yd. Dipper
in Good Condition

F. J. Mann & Sons.
Ashland, Ohio

Caterpillar Steam Shovels

1—30 B Bucyrus Revolving, new June, 1921, 1-yd. dipper, A. S. M. E. boiler, like new.

1—14 B Bucyrus Revolving, built 1920, ⅝-yd. dipper, A. S. M. E. boiler, rebuilt like new.

Grey Steel Products Co.
111 Broadway, New York City

NEW MARION 61
2½ Yd.—70 Ton

Steam Shovel
Sacrifice Price

Small Revolving Shovels in ¾, 1 and 1½-yd. sizes, on ordinary Traction, also Caterpillar Trucks.

Railroad Shovels, all sizes and makes.

W. R. WADDELL,
50 Church St., New York
Tel.: Cortlandt 4873

FOR SALE

MARION Model 40
1½-yd.

Steam Shovel

Shop Number 2268
Complete with new parts.
Can be seen under steam.

THOMAS MULLAN
3945 Greenmount Ave., Baltimore, Md.

CLAM SHELL BUCKETS

½ and ¾ cu. yd. " per day $3.25
1 and 1¼ " " " " 4.00

FOR SALE NEW AND REBUILT HAISS

For All Purposes

D[illegible] and Rehan[illegible]

[illegible] St. and Rider Av[illegible] New York, N.Y.

STEAM SHOVELS

1—Type A-1 Steam Shovel, Traction Wheels ⅞-yd. dipper.
2—Type O Thew Steam Shovels, Traction Wheels, ⅝-yd. dippers.
1—No. 3 KEYSTONE with skimmer and ditcher scoop.
3—ERIE "B"; ¾ yd.

LOCOMOTIVE CRANE

1—15-Ton Browning.

HOISTING ENGINES

1—9 x 12 three-drum Stroudsburg with boiler.
1—8¼ x 10 Lidgerwood, two-drum with boiler.
1—6½ x 10 Mundy, three-drum with swinger and boiler.

Great Lakes Equipment Company
Transportation Bldg., Chicago, Ill.

GUARANTEED

Contractors' Equipment

Immediate Delivery

DUMP CARS

150—12-yd. Western & Oliver, all-steel, two-way Dump Cars, standard gauge.
50—1¼-yd., 20-in. gauge, wood body, two-way Dump Cars.
3—36-in. gauge, 8-wheel Flat Cars, 40,000-lb. cap., 7 ft. wide, 20 ft. long, wheels 24-in. diameter.

STEAM SHOVELS

6—95-ton Bucyrus Railroad Type, 5-yd. dipper; 90 per cent new.
10—70-ton Bucyrus Railroad Type, 2½- to 3-yd. dipper; 90 per cent new.

HOISTING ENGINES

4—7½ x 10-in., double cylinder, single geared drum Hoisting Engine, with reversing throttle valves.
1—6¼ x 8-in., Clyde Double Cylinder, double friction drum steam Hoisting Engine, with two winch heads, drums 14 in. diam., 20 in. between flanges complete with fittings. (No Boiler). Base is made for boiler.

LOCOMOTIVE CRANES

1—15-ton American Hoist & Derrick Company, 8-wheel type Locomotive Crane, 50-ft. boom.
1—10-ton capacity Industrial, 8-wheel type, Locomotive Crane, 35-ft. boom.
1—15-ton Industrial, 8-wheel type, Locomotive Crane, 35-ft. boom.

GENERATORS AND MOTORS

7—Westinghouse 250-hp. Motors. Types C.C.L., 440-v., 60-cy., 3-ph. motors, speed 514 r.p.m., with base and starters. Can be furnished with pulley or flange coupling.
1—60-kw., Triumph Generator, 125 v., D.C., belted.
1—300-kw., G. E. Rotary Converter, 25 cy.

CENTRIFUGAL PUMPS

1—12-in., Worthington Horizontal Centrifugal Pump.
1—24-in., Kingsford Horizontal Centrifugal Pump.

BOILERS

2—150-hp., Triple Riveted Return Tubular Boilers, 66 in. dia., 20 ft. long, 125 lbs. press.
1—125-hp. Triple Riveted Return Tubular Boiler, 72 in. dia., 16 ft. long, 125 lbs. press.
2—125-hp. Triple Riveted Return Tubular Boilers, 66 in. dia., 18 ft. long, 100 lbs. press.
2—100-hp. Triple Riveted Return Tubular Boilers, 66 in. dia., 16 ft. long, 100 lbs. press.
1—50-hp. Locomotive Firebox Boiler, 48 in. dia., 16 ft. 6 in. long, 100 lbs. press.

TANKS

6—Hot Water Feed Tanks, 48 in. dia., 10 ft. long, with one convex and one concave head, manhole in head, about ¼-in. plate.
6—Heavily Constructed Filter Tanks, about 66 in. dia., 5 ft. 6 in. high, with dished heads, ½-in. plate.
2—Open Top Storage Tanks, 4 ft. 9 in. wide, 4 ft. 8 in. deep, 10 ft. 6 in. long; 7/16-in. plate.
2—Open Top Storage Tanks, 9 ft. 6 in. wide, 2 ft. 4 in. deep, 10 ft. 6 in. long; 7/16-in. plate.
1—Open Top Storage Tank, 9 ft. 6 in. wide, 4 ft. 9 in. deep, 10 ft. 6 in. long; 7/16-in. plate.
1—Open Top Storage Tank, 10 ft. wide, 6 ft. 9 in. deep, 16 ft. 3 in. long; 7/16-in. plate.
2—Open Top Storage Tanks, 6 ft. 9 in. wide, 5 ft. deep, 16 ft. 3 in. long; 7/16-in. plate.
2—Open Top Storage Tanks, 10 ft. wide, 3 ft. 3 in. deep, 16 ft. 3 in. long; 7/16-in. plate.
10—Open Top Storage Tanks, 3 ft. wide, 3 ft. deep, 7 ft. long; 3/16-in. material.
12—New Black Seamless, Welded, Open Top Tanks, approximately 43 in. wide, 8 in. deep, 8 to 9 ft. long; 3/16-in. plate.
75—New Government Galvanized Tanks, 18 in. wide, 18 in. long, 48 in. deep, 7-gauge galvanized stock, fitted with hinged cover.
50—New Government Tanks, 39 in. wide, 72 in. long, 56 in. deep, ¼-in. material, capacity 800 gallons.
50—7 in. x 30 in., 150-lb. pressure.
20—16 in. x 12 in., 150-lb. pressure.
25—20 in. x 8½ ft., 150-lb. pressure.
4—36 in. x 6 ft., 125-lb. pressure.
1—42 in. x 12 ft. 6 in., 100-lb. pressure.
1—54 in. x 7 ft. 6 in., 100-lb. pressure.
10—30-in. x 6-ft. Hot Water Tanks, 220-gal. capacity, 65-lb. water pressure.
8—30-in. x 5-ft. Hot Water Tanks, 180-gal. capacity, 65-lb. water pressure.
10—24-in. x 5-ft. Hot Water Tanks, 120-gal. capacity, 65-lb. water pressure.
5—20-in. x 5-ft. Hot Water Tanks, 85-gal. capacity, 65-lb. water pressure.
15—80 Cast Iron, Steam Jacketed Kettles, 100-lb. pressure.
25—Brand New Government Three Compartment Galvanized Storage Tanks, total capacity 120 gal., with faucets and drip pan.
35—Brand New Government Two Compartment Galvanized Storage Tanks, total capacity 200 gal., with faucets and drip pan.
Also a complete stock of Horizontal Underground Gasoline Storage Tanks ranging from 100 to 20,000 gallons in capacities.

Send for Bulletin No. 205 Describing Our Complete Stocks of Machinery and Tanks.

Harris Brothers Co.
35th & Iron Sts., Chicago, Ill.

NEW EXPANDED METAL IN ORIGINAL BUNDLES

500,000 Ft. Slightly Weathered Expanded Metal

Sizes—from 3¾ ft. x 11½ ft. to 6 ft. x 16 ft. and includes sizes 4 ft. x 8 ft., 4 ft. x 10 ft., 4 ft. x 10½ ft., 4 ft. x 11½ ft., 4 ft. x 12 ft., 5 ft. x 10 ft., 5 ft. x 11½ ft., 5 ft. x 12 ft., 5 ft. x 16 ft., and thereabouts.

Average Mesh—2¾ in. x 7 in.

Price—1½c. to 2½c. per square ft. f.o.b. *Norfolk, Va.*

Also 400,000 ft. of ½ in. x 1 in. Diamond Shape Expanded Metal.

Size of Sheets—3 ft. x 8 ft.

Price—2c. per square ft. f.o.b. *Schenectady, N. Y.*

HURWITZ BROTHERS IRON & METAL COMPANY, Inc.

Syracuse, N. Y.

HOISTING ENGINES

1—9-in. x 10-in., D.C., 3D **Mundy with A.S.M.E. Boiler.**
2—9½-in. x 12-in. D.C., D.D. **Lambert with A.S.M.E. Boiler.**
1—8½-in. x 10-in., D.C., D.D., **Lambert with A.S.M.E. Boiler.**
2—30-hp., D.D., **Lidgerwood Gasoline Engines.**
2—18-hp. **Lidgerwood Single Drum Electric Hoists,** 2 ph., 60 cy., 220 v.
50—Additional Engines in Stock; almost Any Size and Every Make.

CLAM SHELL BUCKETS

1—¾-yd. **Browning.**
1—¾-yd. **Lakewood.**
2—1½-yd. **Williams.**
1—1½-yd. **Blaw-Knox.**

ORANGE PEEL BUCKET

1—¾-yd. **Four Leaf Hayward.**

AUTO CRANE

1—Type "C" **Byers Auto Crane** with **A.S.M.E. Boiler.**

AIR COMPRESSORS

1—20-in. and 12-in. x 14-in. **Chicago Pneumatic Type "DCB"** Two-Stage Belted **Compressor,** 1145 cu. ft.
1—22-in. and 14-in. x 18-in. **Laidlaw-Dunn-Gordon** Two Stage Belted **Compressor,** 1200 cu. ft.

HOWARD W. READ

N. W. Cor. 3rd & Arch Sts., Phila., Pa.

Road Oil and Asphalt

Pressure Distributor
On 1919 Packard Chassis

Driven only 3500 miles. Motor in excellent condition; 800-gal. tank capacity. Kinney pump—Pressure provided by truck engine.

Price, $5,000

Can be seen at our plant at 239 North 30th St., Philadelphia.

THE BARBER ASPHALT CO.
Philadelphia

Asphalt Plant Special

We have for sale one rebuilt No. 2 Merriman 1200 yd. One-Car Steam Melting Asphalt Plant. In fine condition, on which we can make good delivery.

Here's an opportunity to get a real plant quickly and at a right price. Better get in touch with us immediately.

The East Iron & Machine Co.
Lima, Ohio

FOR SALE

Rebuilt Cummer Portable Asphalt Plant

1000-YARD CAPACITY

In first-class condition, thoroughly overhauled in our shops

THE F. D. CUMMER & SON COMPANY, CLEVELAND, OHIO

FOR SALE

POWER PLANT

200 hp. Complete

Have installed Central Station Power
200 hp. Vertical Tudor Boiler
16 x 36 Corliss Engine
12 ft. diam. 24-in. face fly wheel
5¼ x 3½ x 5 Worthington Duplex Feed Pump
6-PP Wainwright Feed Water Heater
All necessary piping, gauges, valves, stack, lubricator, etc.

Complete Plant Bargain Price

THE UNITED STATES ROOFING TILE COMPANY
Parkersburg, W. Va.

PAVERS—ROLLER—EXCAVATOR

1—Koehring Paver, wheel traction, steam power, boom and bucket, 2 bag batch, Michigan, $1000.00.
1—Foote 13-E, steam, wheel Paver, 2 bag size, chute, Wisconsin, $850.00.
1—Austin motor Roller, 10 ton, 3 wheel, good condition, Michigan, $1375.00.
1—Parsons steam oscillating type excavator, good order, Wisconsin, $2600.00.

H. Y. SMITH CO., Milwaukee, Wis.

FOR SALE

Erie Tandem Roller

3½-ton in first class running condition. New flues and gears. Will sell at sacrifice.

J. P. LYON, Box 87, Robinson, Illinois.

HOISTS
(with boilers)

1—6¼ x 10 D.C., D.D., National.
1—7¼ x 10 D.C., D.D., and Swinger, National.
1—8¼ x 10 D.C., D.D., and Swinger, National.
1—8¼ x 10 D.C., 3 D., and Swinger, National.
1—8 x 12 D.C., D.D., Mundy.
1—10 x 12 D.C., 3 D., Clyde.

HOISTS
(without boilers)

1—7¼ x 10 D.C., D.D., Mundy.
1—8¼ x 10 D.C., 3 D., and Swinger, National.

BUCKETS

1—½-yd., Lakewood Clamshell.
3—¾-yd. Lakewood Clamshell.
1—1-yd. Lakewood Clamshell.
1—1½-yd. Hayward, Class "E" Clamshell.

T. H. LETSON CO.
50 Church St., New York

Power Drag Scraper, sizes from 1/3 to 5 cu. yd.

1—8¼ x 10 D.D. D.C. Lidgerwood Hoist with boiler.

1—37 hp. American D.D. Electric Hoist Cableway Excavators.

1—9 x 12 Lidgerwood Hoist, 1½ cu. yd. bucket 600-ft. cable span.

1—11 x 14 Mundy Hoist. 2—1½ cu. yd. buckets.

500-ft. cable span. 100-ft. all steel mast.

Several excavator buckets and steam hoists, various sizes.

L. P. GREEN
11 S. LaSalle St., Chicago

ROAD BUILDERS' PLANT

FOR SALE

Road-Rollers; Pavers; Shovels; Keystone Excavators; Locomotives; Track; Dump and Flat Cars; Hoists; Cranes; Graders; Finishers.

All necessary Equipment for complete plant.

JOHN M. GREENE
430 Chestnut Street, Philadelphia, Pa.

FOR SALE

1—10-ton Buffalo-Pitts **Roller.**
1—10-E Foote **Road Paver** with chute, 6 hp. Gas Engine.

HICKEY CONTRACTING CO., INC.
79 West High St., Somerville, N. J.

FOR SALE OR RENT

STEAM SHOVELS

1—Type B Erie revolving traction wheels; ¾-yd. dippers.
1—Model 18 Osgood; revolving traction wheels. Combination steam shovel, clamshell and dragline attachments; ¾-yd. dipper, 32-ft. Crane boom, ¾-yd. Page bucket.
1—70-ton Bucyrus, railroad type; 2½-yd. dipper.
1—150-B Bucyrus Shovel, 2½-yd.
1—175-B Bucyrus Shovel, 3½ yd.

CARS

20—60,000 lb. capacity Box Cars, 34 ft. 7 in. long.
20—60,000 lb capacity Refrigerator Cars, 36 ft. long.

TRACTOR AND TRAILERS

1—120 hp. Holt Caterpillar Tractor, completely rebuilt at factory July, 1921.
3—5-ton Troy Trailers.

LOCOMOTIVES

2—6-wheel Switchers; standard gauge; 40-ton.
2—American Passenger; type 4-4-0; stand. gauge; 50-ton.
5—9 x 14 Dinkeys (3 Porters); 2 Vulcans; 36-in. gauge.
5—14 x 22, 40-ton American Saddle Tank standard gauge.

DRAGLINES

1—Class 14 Bucyrus; skids and rollers; 60-ft. boom; 2-yd. bucket.
1—Class 14 Bucyrus truck mounting, 60-ft. boom, new 2-yd. bucket
1—Class 24 Bucyrus; skids and rollers; 100-ft. boom; 3½-yd. bucket.
1—Monighan, A-1, steam; traction wheels; 40-ft. boom; 1 yd. bucket.
1—Class 210 P. & H. Gasoline driven, 76 hp., Twin-City motor, caterpillars, 48 ft. boom; 1-yd. Page bucket.

The above list is constantly changing. No matter what your machinery requirements are, write us—we may have it.

BECK & BABB, 29 La Salle Street, CHICAGO, ILL.

FOR SALE

ONE SAUERMAN

DRAGLINE CABLEWAY EXCAVATOR OUTFIT

Complete with fabricated steel mast, cables, 1-yard capacity bucket, boiler and hoisting engine. All in first-class condition. Will make an interesting price. THIS IS A BARGAIN. Full details promptly furnished.

Write P. O. Box No. 235, Galion, Ohio

FOR SALE

KOEHRING PAVER

A Koehring No. 14 Paver with 20-ft. Boom and Bucket in good working condition.

Price $1500.00 F. O. B.

KENNEDY & SMITH, INC.
93 Amity Street, Flushing, L. I., N. Y.

Road Building Equipment

18,000 ft. 24 in. Koppel 20-lb. track.
1—5 ton Kelly-Springfield, Tandem Roller.
68 Batch Boxes, 5 Bag Cap.
Will sell cheap for quick removal.

CHAS. ECKBOLD
1075-83 Germantown Ave., Phila., Pa.

1—Haiss Path Digging Wagon **Loader**, 10-hp. engine, $1900.
1—Haiss Self Propelled **Loader**, $1000.
1—1 yd. Mead-Morrison Clam Shell **Bucket.**
1—Haiss 1½ yd. High Power **Bucket.**
½-¾ yd. Haiss Rebuilt **Buckets.**

GEORGE HAISS MFG. CO., INC.
141st St. and Rider Ave. to Canal Place
New York, N. Y.

STONE CRUSHER

1—Gyratory No. 6-F with fittings

Holbrook, Cabot & Rollins Corp.
52 Vanderbilt Ave., New York, N. Y.

SOME SPECIAL BARGAINS

1—3-wheel 12-ton Steam **Road Roller.**
1—8-ton Tandem 2-wheel with **Steam Steerer** as good as new.
1—¾-yd. **Ransom Steam Driven Concrete Mixer** on wheels.
1—12-in. **Morris Steel Lined Dredging Pump.** 5-½ runner without engine. An entire set of patterns for this pump.

R. F. Conway, 39 Cortlandt St., New York

TANDEM ROLLER

7½ ton Tandem Universal Steam Roller. Excellent condition throughout. Completely overhauled. $750. F.O.B. Newark, N. J.

J. E. Haetten & Co., Inc.
50 Church Street, New York.

ROAD MACHINERY

FOR SALE

Consisting of Concrete Mixer, Finisher and Forms, Road Rollers and Water Pump.

FIRST NATIONAL BANK, Weatherly, Pa.
R. R. Gangwer

One Cement Chute

FOR SALE

Complete, in good condition. Includes 3 chutes, 21 ft. each; 3 chutes, 11 ft. each; 3 hoppers, 1 elevator hoist hopper, 29 ft. pole, 4 cement carts.

Address P. O. Box G,
Clinton, Mass.

Koehring Paver

HALF CATERPILLAR TRACTION

Koehring 18E on half caterpillars. Boom and bucket; batchmeter. Shop No. 4648. Good operating condition. Quick delivery. Reasonable price. Located Erie, Pa.

E. H. Wilson & Company
Commercial Trust Building
Philadelphia

Bargains for Contractors and Quarries

Nos. 3, 4, 4½ and 5 **Champion Crushers**, elevators, bins and screens, portable and stationary.
60 hp. locomotive type **Farquhar Boiler**, mounted, $600.
No. 2½ **Climax Crusher**, elevator and screen, portable, $1200.
Gasoline and Electric **Loaders.**
Rex 14E **Paver**, Boom and Bucket, $2500.
Specialty 18-ft. belt **Loader**, 15-in. belt, portable, $350.
1—10E **Koehring Paver**, Boom and Bucket, $1000.
Peerless Crane 8½ x 13 Engine, Butt Strap Boiler, 40-ft. Boom and Bucket, $2500.

Rollers, Pumps, Hoists, Crushers, etc.
Send us your inquiries.

The Cable Excavator Co.
Fernwood, Del. Co., Pa.

CONSTRUCTION MACHINERY

Realizing the advantages at times of purchasing good used equipment, I have personally inspected and now offer for sale the following:

Road Pavers
Steam Shovels
Dinkeys
Concrete Mixers
Cranes
Drag Lines
Gasoline Locomotives
Trenching Machines
Wagon Loaders

All of the above for sale and then some. Send me your inquiries.

ALFRED J. FORSCHNER
Real Estate Trust Bldg., Philadelphia, Pa.

IMMEDIATE DELIVERY

Send us your Steam Shovel Inquiries

66 x 86 in. TRAYLOR JAW CRUSHER.
No. 18K GATES CRUSHER.
50-75 H.P. Single Drum HOISTS, 25 cy. motors.
25-40-50 H.P., D.D. HOISTS, 60 cy., 220-440 v., 3 ph.
Nos. 3, 5, 6, 7½ and 8K CRUSHERS.
6 and 12 ton Gasoline LOCOMOTIVES.
10 in. x 12 in Steam HOIST, 3 drum.
2—Disc CRUSHERS, 36 in. Symons.
2—60 ft. Barber-Greene, 18 in. Belt CONVEYORS.
100-ton, 2½ yd. Electric SHOVEL.
50 to 5000 ft. Steam, Belt and Electric COMPRESSORS.
Jaw and Roll CRUSHERS.
10, 15 and 20 ton Locomotive CRANES.
13 x 30 in., 9 x 14 in., and other Jaw CRUSHERS.
24 x 54 McLANAHAN Roll CRUSHER.
Send us your inquiries for Steam Engine, Centrifugal Pumps, Quarry and Contractors' Equipment, etc.

ROSS POWER EQUIP. CO.
Indianapolis, Ind.

ARCHER ARMSTRONG & CO.
Grand Central Terminal, New York City

FOR SALE OR RENT

COMPRESSORS	GENERATORS
DERRICKS	HOISTS
BOILERS	CRANES
SHOVELS	MOTORS
CONCRETE MIXERS	PUMPS

Vanderbilt 10408

FOR SALE OR RENT

We make a Specialty of Renting Contractors' Outfits

STEAM SHOVELS
Model 60 Marion
Erie ¾ yd. revolving
Marion ⅝ yd. revolving

CARS
12-yd. Western Std. gauge
4-yd. Western 36 in. Std. gauge

LOCOMOTIVES
36-ton Std. gauge saddle tank
60-ton Std. gauge switchers
18-ton 36 in. gauge Porters
12-ton 36 in. gauge Porters
10-ton 36 in. gauge Davenports

Railroad Ditchers, Locomotive Cranes, Other Heavy Equipment

H. KLEINHANS COMPANY
Union Arcade Building, Pittsburgh, Pa.

Air Compressors

2—710 C.F.M. Class WJ3 Sullivan Angle-Compound Belt Driven Air Compressors. Practically good as new. Immediate shipment.

A. McMILLAN
628 Monadnock Block, CHICAGO, ILL.

FOR SALE OR FOR RENT

Concrete Mixers, Lakewood Concrete Towers, Hoisting Engines, Derricks, Pumps, Gasoline Tractors, Steam Hammers, Buckets and Compressor outfits.

Edward Ehrbar, Inc., 270 West St., New York City

PUMP
FOR SALE

1—Brand new motor-driven De Laval Pump, 2-stage series type, with pressure regulator and self-starter. Will deliver 750 gallons water per minute at 1800 revolutions, attached to 75 hp. G. E. motor.

Address P. O. Box G, Clinton, Mass.

FOR SALE

3300-2678-1726 ft. PRE. I. R. Electric.
NEW 1730-ft. Chicago Syn. Electric.
1094-709-ft. WJ-3 Sullivan Angle, two-stage belt.
888-ft. XB-2 Ingersoll, two-stage belt.
741-ft. O-CB Chicago, two-stage belt.
NEW 599-ft. XB-2 Ingersoll, two-stage belt.
NEW 209-116-ft. Cayton, single-stage belt.
2000-ft. WC Sullivan, steam.
NEW 1955-1260 XPV-3 Ingersoll, steam.
1190-ft. X-3 Ingersoll, steam.
888-599-ft. X-2 Ingersoll, steam.
396-ft. WB-2 Sullivan, steam.
179-ft. NF-1 Ingersoll, steam.
100-hp. NEW 220-440-550-2200-v. motors.

A. LEE ELLIS
10 High St., Boston 9, Mass.

Second-Hand
MACHINERY
Contractors' Equipment

Stacks, Tanks, Pipe, Etc.

What are your requirements?

Henry A. Hitner's Sons Co
4501 Richmond St., Philadelphia, Pa.

A REAL OPPORTUNITY

New Structural Steel
Slightly Rusted—Not Pitted.

275 tons 6-in. I—15 ft. 0 in. long
250 tons 5-in. I— 9 ft. 0 in. long
350 tons 4-in. I—12 ft. 0 in. long

Exceptionally low price before removal. Located New Cumberland, Pa.

Henry A. Hitner's Sons Co.
4501 Richmond Street, Philadelphia, Pa.

---

2 AIR—COMPRESSORS—NEW
Direct Connected to Motors

1700 cu.ft., 22—14 x 18 Bury, 225 r.p.m., 100 lbs.
350-hp. G. E., 440-v. 3-ph., 60-cy., 225 r.p.m. Syn. Motor.
Controlling Panels—Never Used, Low Price.

H. R. WILSON MACHINERY CO.
417 Pine St., St. Louis, Mo.

COMPRESSOR

12 x 12 Chicago Pneumatic Duplex Compressor, 50-lb. pressure, good condition throughout. Arranged for belt drive. Price $850 f.o.b. Jersey City, N. J.

J. E. HAETTEN & CO., INC.
50 Church Street, N. Y. C.

ROCK DRILLS

Murphy Tripod Drills, NEW, from 2½ in. to 3⅝ in. ready for immediate shipment.

Also quantity of drill steel in various lengths (NEW).

Send for our July list of the largest stock in the United States of slightly used or thoroughly overhauled Machine Tools, Power, Electrical and Contractors' Equipment.

WICKES MACHINERY CO.
Jersey City, N. J.
Established 1900.

FOR SALE OR RENT

HOISTS

1—Lidgerwood 8¼ x 10, D.C., D.D.
1—Mundy 7 x 10, D.C., D.D.
1—American 10 x 12, D.C., D.D.
2—Meade-Morrison 7 x 10, D.C., D.D.
8—Novo double drum, 12 hp., 2 cyl.
1—Flory 9 x 10, D.C., 3-D.
1—Lidgerwood 6¼ x 8, D.C., D.D.
10—Others ranging in sizes from 10 to 100 hp.

DERRICKS

1—All-steel 75-ft. boom, cap. 10 tons.
1—All-steel 61- to 110-ft. boom, cap. 20 tons.
1—Steel Guy, 80-ft. boom, cap. 15 tons.
1—All-steel stiffleg, 140-ft. boom, cap. 50 tons.
3—Derrick cars.

ROAD EQUIPMENT

1—5-ton tandem Iroquois, steam.
1—10-ton, 3-wheel Austin, gas.
1—Kelly 12-ton, 3-wheel, steam.
1—Erie 8-ton tandem, steam.
1—Adams grader with scarifier attachment.
2—Austin standard block scarifiers.
2—Lakewood finishing machines.
320—24-gauge Western flat cars.
220—54-ft. wood batch boxes.
200—30-ft. wood batch boxes.

CONCRETE MIXERS AND PAVERS

1—No. 12-E Koehring Paver.
1—No. 14-E Milwaukee Paver.
2—Koehring 18-E caterpillar pavers.
1—1-yd. Koehring building type elec. motor.
1—1-yd. Smith tilting type.
1—No. 14-S Koehring side loader, 4 cy. gas eng.
3—1 sack Rex low charging.
20—Others of various makes and sizes.

STEAM SHOVELS AND CRANES

1—Type B Erie traction wheels, ¾-yd. dipper.
1—Type O Thew traction wheel.
1—Type B Erie crane.
1—Byers Auto Crane traction wheel.
1—No. 3 Keystone excavator.
1—Osgood No. 18 combination shovel and crane.
1—Model 28 Marion traction wheel.
1—Bucyrus 18-B traction wheel.

LOCOMOTIVES, CARS AND TRACK

1—Flymouth, gas, 3-ton, 24-in. gauge.
3—Whitcomb, 6-ton, 24-in. gauge.
1—Vulcan, steam, 24-in. gauge.
1—25-ton standard gauge saddle tank.
12—Western, 36-in. gauge, 4 yard cars.
15—All-steel Western, 24-in. gage, 1½-yd. cars.
100—Koppel "V"-shape, 24-in. gauge, 1 yd. cars.

MISCELLANEOUS

1—Erie Cent. Pump, 8-in. suction steam engine.
1—No. 6 Morris Cent. steam engine.
1—No. 2 Vulcan steam hammer.
1—No. 6 Austin gyratory crusher.
3—Jaw crushers.
1—Insley 140-ft. steel tower with spouting.
1—Insley 200-ft. steel tower with spouting.
1—125-hp. Bates Corliss Engine.
1—30-hp. locomotive type boiler on trucks.
1—Chicago Compressor 8 x 12, belt drive.
1—"OO" Austin trenching machine.

CLAM AND ORANGE PEEL BUCKETS

1—Lakewood ¾ yd.
1—21-ft. Hayward orange peel, new.
2—15-ft. Hayward orange peel, new.
Also cableways, draglines, pumps and miscellaneous construction equipment.

We carry a complete line of construction and road equipment.

RENNOLDS EQUIPMENT CO.

Telephone: Randolph 4184

907 Lumber Exchange Bldg., Chicago, Ill.

CRANES *FLOATING EQUIPMENT* *SHOVELS*

LOCOMOTIVE CRANES

1—20-ton type "G" Industrial 8-Wheel Loco. Crane bucket operating 50-ft. boom; new 1917.
1—15-ton Brown-Hoist, 8-wheel, 42-ft. boom. Single Drum completely rebuilt. Perfect Condition.
1—17-ton Browning 8-wheel, Double Drum, Lap Seam Boiler, 42-ft. boom. Rebuilt, Perfect condition.

AIR COMPRESSOR

1—1955-cu. ft. Ingersoll-Rand, Imperial Type XPV-3. Steam Driven Air Compressor with intercooler. Condition like new.

50 TON DERRICK BOAT

1—50-ton Derrick Boat Hull, 98 ft. 8 in. x 42 ft. x 10 ft. deep. Three drum 12 in. x 12 in. Lidgerwood Engine with separate 8 x 10 Lambert Swinger, 14-ft. Steel Bull Wheel, 80-ft. Steel Boom, 55-ft. Steel "A" frame. Completely equipped and rebuilt. Located Philadelphia.

LOCOMOTIVE

1—13 x 18 American Saddle Tank 0-4-0. Standard Gauge, approx. weight, 30 tons. New December, 1913. M.C.B. and I.C.C. Full extended tank. Westinghouse Air Pump and straight-line Air. Completely rebuilt.

CARS *LOCOMOTIVES*

B. M. WEISS

1324 Widener Bldg. *'Phone—Locust 4816* **Philadelphia, Pa.**

Keystone Excavators

FOR SALE

I have to offer absolutely new Model No. 4—'22 Keystone Excavators and also several used Model No. 3 Keystone Excavators. These Model No. 3 machines are in good working order and can be inspected at present on the job. Immediate deliveries.

J. WALKER WILSON
905 Mahoning Bank Bldg., Youngstown, Ohio.

District Sales Agent Keystone Driller Co., Beaver Falls, Penna. for northern Ohio and northwestern Pennsylvania.

DON'T MISS THIS

We offer for immediate shipment OVER 300 UNUSUAL BARGAINS in high grade used and rebuilt CONTRACTORS' EQUIPMENT including

Locomotives (steam and gasoline)
Caterpillar tractors (5-10-12 tons)
Dump Cars and Trailers
Steam Shovels (all sizes and types)
Draglines (all sizes and types)
Locomotive Cranes (caterpillar)
Pavers (all sizes—wheels or crawlers)
Trench Machines (3 sizes)
Road Rollers (steam and gasoline)
Loading and Unloading Machines
Crushers—Derricks—Hoists

Wire or write us today

CROCKWELL MINE & MILL SUPPLY CO.
907 Fed. Reserve Bldg., St. Louis

STIFF LEG DERRICK OUTFIT

45-ft. mast, 75-ft. spliced boom, 8¼ x 10, D.C., 3D Mead-Morrison Engine with Massachusetts Standard boiler, 3½ x 5, D.C. independent swinging engine, 1-yd. Hayward Bucket.

HENRY LEVIS & COMPANY
Commercial Trust Bldg., Philadelphia, Pa.

LOCOMOTIVE CRANES

1—McMyler Int. 8-w., 50-ft. boom, 10-ton cap., Bucket operating.
1—Byers auto crane on cat.
1—Dragline excavator, gasoline power, 50-ft. boom, ¾-yd. bucket, on crawlers.
1—3-ton crane, ⅝-yd. bucket, gasoline, on crawlers.
1—O. & S. 10-ton crane on crawlers, gasoline power, 35-ft. boom.

BYRON C. BROWN
1105 E. 141st St., Cleveland, Ohio

For Sale or Lease

HOISTS

Compressors—Boilers—Mixers
Derricks—Cableways

Send for our list on rebuilt machinery

HOISTING ENGINE SALES COMPANY
Grand Central Sta., New York City.

FOR SALE

ROAD ROLLER

10-ton, 3-wheel Buffalo Pitts; boiler inspected for 120 lbs. steam in New York. In good operating condition. Price, $1,000.

MARVIN BRIGGS, INC.
167 Sixth St., Brooklyn, N. Y.

TEN LOCOMOTIVE CRANES

2—Ohios, 30-ton cap. D.D. 8-wheel M.C.B., 50-ft. boom.
2—Ohios, 15-ton cap. D.D., 8-wheel M.C.B., 50-ft. boom.
1—Industrial, 40-ton cap. D.D., 8-wheel M.C.B., 70-ft. boom.
5—Osgoods "29" 4-wheel standard gauge, 40-ft. boom.

These Cranes all equipped with A.S.M.E. boilers and are ready for work. If you wish to inspect wire OWNER.

PHILIP T. KING
The Crane Man
Cortlandt 1501 30 Church St., New York.

LOCOMOTIVE CRANES

For Sale or Rent.

2—25 ton, 8 wheel, Industrial, built 1918, A.S.M.E. boilers, 50-ft. booms.
2—15 ton, 8 wheel, Ohio, built late 1917, A.S.M.E. boilers, 50-ft. booms.
3—20 ton, 8 wheel, Browning, built 1920, A.S.M.E. boilers, 50-ft. booms, 15-ft. extensions.

Grey Steel Products Company
111 Broadway, New York City.

LOCOMOTIVE CRANES

1—15-ton, 8-wheel Brownhoist, 50-70 ft. boom.

1—7½-ton Browning electric.

1—7½-ton Industrial.

1—15-ton, 8-wheel Browning, 46-ft. boom, double drums.

HOISTING MACHINERY CO.
50 Church St., New York

FOR SALE OR RENT

15 HOISTING ENGINES
27 AIR COMPRESSORS
10 CONCRETE MIXERS
50 MOTORS
10 DERRICKS
30 DUMP BUCKETS
3 CABLEWAY OUTFITS
60 PUMPS
3 LATHES
5 LOCO BOILERS
10 UPRIGHT BOILERS
9 SWINGING ENGINES
21 AIR RECEIVERS
200 JACKS

PIERCE FOUNDATION CORPORATION

738 East 141st St., New York City
Phone: Melrose 7678

FOR SALE

1—Byers Auto Crane.
1—Link Belt Concrete Mixer.
1—Climax Stone Crusher and Bin.

Western New York Utilities Co., Inc.
Medina, N. Y.

CARS

12 cu.-yd. capacity, 19-ft. bed, long cylinder air dump, air and hand brakes, M.C.B., 60,000-lb. capacity, trucks, box girder doors. A-1 condition, built by Western Wheeled Scraper Co.

50-ton capacity, all steel hopper coal cars.

LOCOMOTIVE

18-ton Porter, 36-in. gauge saddle tank locomotive, 160-lb. pressure.

All immediate Delivery

THOMAS F. CAREY CO.
120 Liberty St., New York, N. Y.
Railroad and Construction Equipment

P. E. Francis & Co.

Railroad and Industrial Equipment
Marquette Bldg., Chicago, Illinois

ASPHALT PLANTS
BOX CARS
FLAT CARS
GONDOLA CARS

1—36-in. gauge, 7½-ton **Vulcan Locomotive.**
2—36-in. gauge, 9-ton **Vulcan Locomotives.**
1—36-in. gauge, 14-ton **Davenport Locomotive.**
1—42-in. gauge, 7½-ton **Vulcan Locomotive.**
1—42-in. gauge, 16-ton **Davenport Locomotive.**
1—8½ x 10, Lidgerwood D.C., D.D., **Hoist with Boiler.**
1—8 x 10, D.C., S.D., **Hoisting Engine.**
1—**Keystone Excavating Shovel.**
1—250-hp. **Marine Boiler.**
1—40-hp. **Marine Boiler.**
6—**Vertical Boilers,** 10 hp. to 40 hp.
10—**Engines,** 6 hp. to 150 hp.
2—16 x 32, D.C., **Hoisting Engines.**
4—**Electric Hoisting Engines.**

Pittsburg Boiler & Machine Co.
Pittsburg, Kansas

RELAYING RAILS

of all weights. Write us for prices. Track material and equipment.

H. M. FOSTER COMPANY
Continental Bldg., Baltimore, Md.

RAILS

STEAM SHOVELS **CARS**
LOCOMOTIVES **CRANES**
Railway and Contractors' Equipment
Trenching Machines for Rent

E. C. Sherwood 50 CHURCH ST. NEW YORK

56-LB. RAILS

1000 tons, 56 lb. Relayers with Angle Bars. Immediate shipment from stock.

MERCHANTS STEEL & SUPPLY CO.
208 S. La Salle St., Chicago, Ill.

Rails and Bridge Girders

A large tonnage of most all section rails and bridge girders of various sizes in stock for immediate shipment. Also spikes, bolts, frogs and switches.

M. K. FRANK
Frick Bldg., Pittsburgh, Pa.

STEEL SHEET PILING

We offer for Sale Immediate Shipment

300 pcs. Lackawanna Arched Web Piling, 24 ft. long.
12 pcs. No. 2B Standard Corners, 24 ft. long.

This sheeting never driven.
Good As New.

We Want to Buy

900 pcs., 8½-in. Lackawanna, 12 ft. long.
350 pcs., 14-in. Arched Web, 30 ft. to 35 ft.

We have other sections to offer at attractive prices. Send us your inquiries. We will be glad to quote you.

We are in the market for both Lackawanna and U. S. Sheeting. Will pay cash for any Section, either make.

JAY L. HENCH & CO.
208 South LaSalle Street, Chicago, Ill.

We specialize in

STEEL SHEET PILING

Buying and Selling
Also all other equipment contractors use.
Walter A. Zelnicker Supply Co., St. Louis
Write for our new Bulletin No. 300—it's free.

Steel Sheet Piling

Lackawanna and United States in various lengths for immediate shipment.

BROWN & SITES CO.

Main Office:
30 Church St., New York City

STEEL PILING

BOUGHT AND SOLD

UNIVERSAL EQUIPMENT COMPANY
Niagara Falls, N. Y.

STEEL SHEET PILING

Hoisting engines with A.S.M.E. Boilers, Road Equipment, Rails

S. W. LINDHEIMER
First National Bank Bldg., Chicago.

Trench Machines

1—Parsons Model 60 digs 20 ft. deep and up to 60 in. wide, steam driven.
1—Austin 00 digs 10 ft. deep up to 29 in. wide, gasoline driven.
1—Austin Backfiller, 35-ft. boom
3—Parsons Backfillers, caterpillar traction.
2—Buckeye No. 4 Gasoline driven.
1—Buckeye 10-ft. machine, steam driven.

J. McELROY
11 S. LaSalle Street, Chicago

BROWNHOISTS

4—15-ton, almost new.

I BEAMS

400 tons of 6-in., 12¼-lb. Steel Beams, 15 ft. 9 in. long.
200 tons of 10-in., 25-lb., 14 to 16-ft. Beams.

HOISTING ENGINE

1—Twin Drum Coal Hoist, made by G. Haiss Mfg. Co., N. Y. Cylinders 8x12; drums 24-in. dia., 16 in. face; 37-in. dia. flanges; 40 hp.; grab ½ ton.

BOILERS

4—Manning Vertical Boilers, 500 hp.; will insure 175 lb. Immediate delivery.
1—H.R.T. Boiler, 72-in. dia. x 16 ft. 3 in.; 125-lb. pressure.
3—72-in. dia. H.R.T. Boilers, 19 ft. 6 in. long, 135-lb. pressure.
4000 ft. 1⅜-in., 6 x 19 C. S. Hauling Wire Cable. Also some 1-in. and 1¼-in. Galvanized Cable.

TANKS

All sizes of Tanks, open and closed, suitable for storage of gasoline or oil, in stock at our Boston Yard.

The Perry, Buxton, Doane Company
214 West First St., South Boston 27, Mass.

FOR RENT and SALE

20—12-yd. Western dump cars, std. gauge.
50—60,000-lb. capacity flat and box cars.
1—Western standard gauge spreader.
1—Osgood 18 revolving shovel, traction wheels, No. 794, ¾-yd. bucket, used 8 months.
1—Class 14 Bucyrus dragline on caterpillars, 70-ft. boom, 2-yd. bucket, used 6 months.
1—Marion 76 steam shovel, No. 3503, std. gauge, weight 110 tons, used 10 months.
1—No. 2 Brownhoist 4-wheel gas. crane, std. gauge, 40-ft. boom, ½-yd. bucket, new 1921.
64—NEW 18-in. I beams, 80 lbs. per ft., 40 feet long, not drilled.
1—NEW Lakewood concrete chuting system.
6—NEW wood-burning locomotive-stacks.

LOCOMOTIVES

1—50-ton 18 x 24-in. six-wheel switcher.
1—40-ton 17 x 24-in. four-wheel switcher.
2—NEW 24-ton six-wheel Porters, separate tender, 36-in. gauge.
2—18, 14, and 10-ton Vulcans, 36-in. gauge.

INDUSTRIAL EQUIPMENT CO.
McCormick Building, Chicago, Ill.

LOCOMOTIVES

1—10-Wheel, 19 x 26 Baldwin Locomotive, standard gauge, 160 lb. steam pressure.
2—50-ton, 6-wheel Switchers.

CARS, SPREADER

20—12-yd. Western Dump Cars.
8—16-yd. standard gauge Western Dump Cars, steel underframes, steel-lined floors.

CONCRETE BUCKETS

4—BRAND NEW, 1-yd. Insley Concrete Buckets.

SHOVEL

1—70-C Bucyrus standard gauge, 2½-yd. dipper; excellent condition.

We are not equipment dealers, but contractors and above equipment has been released from our contracts.

The Fred R. Jones Co., Inc.
111 W. Washington Street, Chicago, Ill.

LOCOMOTIVE

1—9-in. x 14-in., 36-in. Gauge, Porter Saddle tank locomotive. Shop No. 5333, weight 28,500 lbs., steam pressure 165 lbs. Excellent condition.

SMITH-McCREA COMPANY,
House Bldg., Pittsburgh, Pa.

TRAILERS—TRACTORS

14—TROY TRAILERS, 2½-ton drop frame; side dump.
1—10-ton Holt Caterpillar Tractor, 40-60 type.
2—5½-ton Mack Flushers, 1,200-gal. tank, with Ottafy sprinklers.
All in first-class condition, completely overhauled.

HARRY BROCKLEHURST
512 W. Norris St., Philadelphia, Pa.

UNDERWRITERS' PUMP

Blake & Knowles, 750 gal. per minute, steam driven, excellent condition.

New Jersey Location

W. H. CAMPBELL, INC.
30 Church St., New York City
Cortlandt 5727

FOR SALE

PARSONS' TRENCHING MACHINE

For Immediate Delivery

JOHN B. McLANE & COMPANY
Newport, Kentucky

50 Tons New Galvanized Plow Steel Wire Rope in Original Reels

	Sizes,	No. of Reels
J. A. Roebling Wire & Rope Co.	1 ⅛ x 6 x 12	2
J. A. Roebling Wire & Rope Co.	1 ⅛ x 6 x 37	1
Macomber & Whyte Co.	1 ⅛ x 6 x 19	1
Macomber & Whyte Co.	1 ⅛ x 6 x 12	2
Williamsport Wire & Rope Co.	1 ⅛ x 6 x 12	43
American Steel & Wire Co.	1 ⅛ x 6 x 37	4
Broderick & Bascom	1 ⅛ x 6 x 37	5
Broderick & Bascom	1 ⅛ x 6 x 12	2
American Steel & Wire Co.	⅞ x 6 x 12	6

50% Off the Present Manufacturer's Net Price.

Hurwitz Bros. Iron & Metal Co., Inc., Syracuse, N. Y.

Hoisting Engines

FOR SALE OR RENT

2—10 x 12 D.C. D.D. Skeletons, 1 Lambert, 1 Lidgerwood.
2—9 x 12 D.C. 3-Drum with Boiler, 1 Lambert, 1 Mead-Morrison.
1—9 x 10 D.C. D.D. Mundy with Boiler and attached swinger.
2—9 x 10 D.C., 3-Drum Skeleton, 1 Lidgerwood, 1 Lambert.
2—8½ x 10 D.C. D.D. Lambert with Boiler.
4—7¼ x 10 D.C., 3-Drum Mundy with Boiler.
40—Double Drum Steam Hoists with Boiler or without, all sizes.
6—Double Drum Hoists with 4-cylinder Le Roi Gasoline Motor.
12—Separate Swinging Engines.

Equipment Corp. of America
Chicago, 1455 Lumber Exchange
Pittsburgh, 855 Empire Bldg.
Philadelphia, 655 Land Title Bldg.

New No. 21-E Austin Paver

Full Caterpillar Tread, with boom and bucket. Steam operated. Used three days.

F. H. WELLS, Lyons, N. Y.

FOR SALE

No. 3 Keystone Shovel

In first class condition, new gears, boiler tested for 100 lb. working pressure; complete with all fittings. Can be seen in operation on Route No. 89, Frenchtown, Crawford County, Pa.

FORT PITT CONSTRUCTION CO.
210 Martin Bldg., Pittsburgh, Pa.

PIPE

PIPE

PIPE

ALBERT & DAVIDSON Corp.

FOR SALE Second-Hand and NEW **PIPE**

Large Stock All Sizes Threaded and with Couplings
Also Cut to Sketch

256-264 Oakland Street, Brooklyn, N. Y.

Second-Hand and New

PIPE

¾ to 18 inch with threads and couplings.
Guaranteed for service.
Pipe up to 18-in cut to sketch.

Pipe & Contractors Supply Co.
3 Dover Street, New York City

O. D. WROUGHT PIPE, Plain Ends

Large quantity new pipe purchased for war work but has never been used.

1200-ft., 24-in., O.D., ⅜-in. wall.
1400-ft., 21-in., O.D., ⅜-in. wall.
3700-ft., 18-in., O.D., 5/16-in. wall.
1000-ft., 15-in., O.D., 5/16-in. wall.
400-ft., 10-in., O.D., ¼-in. wall.
1400-ft., 9-in., Extra Heavy.

Also 30,000-ft., New National Tube Co., 6-in. pipe, full weight, with couplings and protectors.

Quantity spiral galvanized pipe, sizes 12 in., 18 in. and 20 in. Also have 300,000 ft. black and galvanized rethreaded wrought pipe, with threads and couplings from 1 in. to 12 in. All above offered considerably below present market prices. State quantities and we will quote for prompt deliveries, cars here. For prices apply

Marine Metal & Supply Co., 167 South St., New York City

NEW AND SECOND HAND

PIPE

Large complete stock.
All sizes.
Immediate shipment.
Lowest prevailing prices.

Illinois Pipe & Mfg. Co.
3400 So. Lawndale Ave., Chicago, Ill.

Wrought Iron and Steel Pipe
New and second hand.

REPUBLIC PIPE AND IRON CORP.
1185 Flushing Ave., Brooklyn, N. Y.

PIPE

Large Stocks, New and Second Hand.
Immediate Delivery

L. & D. Metal & Supply Co., Inc.
1096 Flushing Avenue, Brooklyn, N. Y.

New and second-hand. With new threads and couplings. All sizes from ½ to 12 in. Also cut to sketch.

DAVIDSON PIPE & IRON CORP.
436-40 Kent Ave., Brooklyn, N. Y.

GREENPOINT

SECOND-HAND PIPE

All sizes—with new threads and couplings.
Also cut to sketch

GREENPOINT IRON & PIPE CO., INC.
330 Graham Ave., Brooklyn, N. Y.

16 INCH PIPE

About 1000 ft. practically new, Van Stone Flanges.

Also large stock all other sizes.

FRANK GRIFFITH
412-424 Moyer St., Philadelphia, Pa.

PIPE SECOND HAND

With new threads and couplings; also cut to sketch.

PFAFF & KENDALL
Ferry & Foundry Sts., Newark, N. J.

For Pipe Buyers **Engineering News-Record's PIPE PAGE** *For Pipe Sellers*

Count the Cars!

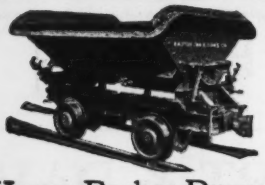
There are 26—hitched on to a 4-ton American Gasoline Locomotive. Now—count *the cost.* The cost of hauling with this model (4 tons) can be cut down to from 2 to 6 cents a ton mile. How does this compare with your present hauling cost? Figure it out—remember that the American Gasoline Locomotive requires no auxiliary equipment—nothing but rails and gasoline! We make 3 models—3½, 4 and 7 tons. *Catalog on request. Write.*

THE HADFIELD-PENFIELD STEEL CO.
BUCYRUS OHIO

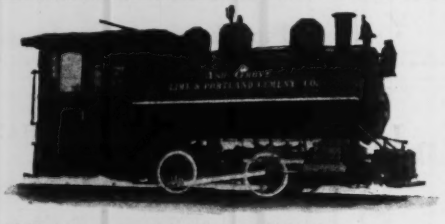
Branch Offices: New York and Chicago

Specialists
in the
DESIGN AND MANUFACTURE
of
Standard—Insulated Compromise Rail Joints
THE RAIL JOINT COMPANY
61 Broadway, New York City

EASTON CARS
TRACK SWITCHES

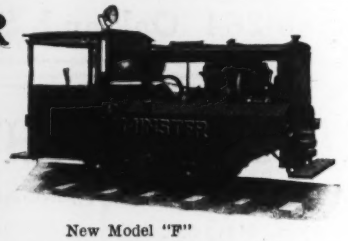


Heavy Rocker Dump Car
48 Church St., New York; Easton, Pa.; Pittsburgh; Norfolk; Philadelphia; Birmingham; Savannah; St. Louis; Los Angeles, Cal.; Salt Lake City, Utah.
EASTON CAR & CONS'T'N CO.
2158-E



All sizes and types of light steam
LOCOMOTIVES
ROD AND GEAR-DRIVE
Davenport Locomotive Works
Davenport, Iowa

MINSTER
Gasoline Industrial Locomotives *For* Service and Lasting Economy



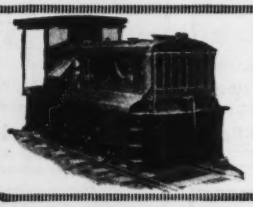
New Model "F"

There is great satisfaction in good equipment. Experience, the Best of Material, Careful Workmanship, and Rigid Inspection warrant your confidence in our Equipment.

The Industrial Equipment Co.
210-216 Ohio St., Minster, Ohio
Eastern and Export Department: The Herbert Crapster Co., Inc.
1 Madison Ave., New York City

PORTER LOCOMOTIVES

OVER A HALF-CENTURY of SERVICE
H·K·PORTER CO.
PITTSBURGH, PA.



PLYMOUTH
Gasoline Locomotives
For all Industrial Haulage
Ask for Bulletins
THE FATE-ROOT-HEATH CO.
Plymouth, Ohio, U. S. A.

Ramapo
Automatic Safety Switch Stands
Ramapo Iron Works
Hillburn, New York, Niagara Falls, New York.

WHITCOMB LOCOMOTIVES
Manufacturers of Locomotives
Gasoline-Storage Battery-Trolley-Combination
Geo. D. Whitcomb Company
Rochelle, Illinois, U. S. A.
See our ad. in the first issue of each month

Don't Get Mad! Reform!

We are just laughing at you and trying to save your bacon for you.

We used to write those violet water, turtle dove kind of advertisements.

But neither you nor anyone else ever read them any more than you now read the hundreds of other such gentle advertisements in this paper.

Say, why did you turn to this card to read "Ridgway's Sass an' Impudence?"

Did we ever tell you this:—

Mr. Bullard who owned the Bullard Machine Tool Co. of Bridgeport, Conn., used to get indignant at our weekly preachment.

"Rot, arrant rot," he would cry, "disgrace to the pages of a dignified trade paper. The fellow's a fool."

But he read the "Rot" every week just the same.

Then in course of time Bullard would build a new factory. That's it you see from the cars as you pass through Bridgeport.

One day we got a letter saying if we had a representative in New England the Bullard Co. would be glad to have him call.

Old Hook 'er put on a biled shirt, grabbed his blue prints and pulled for Bridgeport.

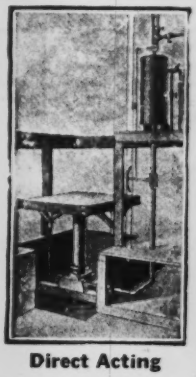
"Well, you're not the kind of a man I expected to see," said Mr. Bullard.

And right then and there in that interview Mr. Bullard like all the others who meet us personally became one of our best friends until he went home.

Oh yes, we equipped the new factory and his sons who own the splendid big plant today will say to you, if you ask them

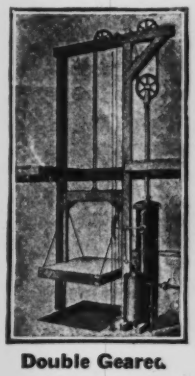
"HOOK 'ER TO THE BILER"

CRAIGE RIDGWAY & SON CO., Coatesville, Pa.
ELEVATOR MAKERS TO FOLKS WHO KNOW

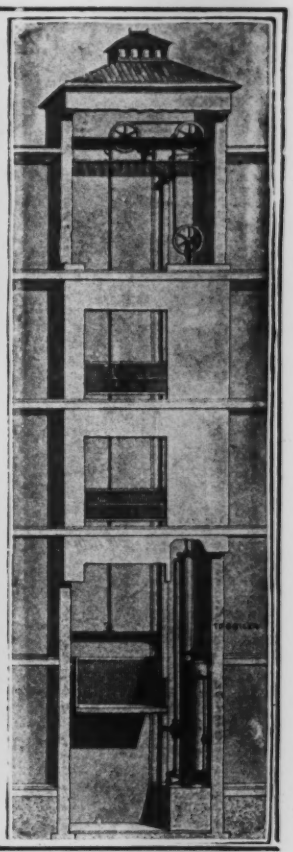


Direct Acting

Over 3000 in Daily Use



Double Geared



Takes 1200 people to publish them

A PASTE-POT and shears, wielded by a couple of editors and an office boy? No, the McGraw-Hill papers aren't published on that basis.

It takes 1200 men and women to edit and publish these thirteen journals. That is one reason why each is dominant in its peculiar sphere of civil, mining, chemical, mechanical or electrical engineering.

THE 13 McGRAW-HILL PUBLICATIONS

McGraw-Hill Co., Inc., New York

Ingeniería Internacional
Chemical & Metallurgical Engineering
Engineering & Mining Journal
Electrical Review & Industrial Engineer
Power
Coal Age
Electrical World
American Machinist
Journal of Electricity
Electrical Merchandising
Electric Railway Journal
Engineering News-Record
Bus Transportation

F-4

446 LOADS

One Morning's Work

Cubic yard loads, too! Haul, 750 feet. All in one morning. This is the record of F. L. Bondurant, Road Contractor, Kirksville, Mo., on State road work. Mr. Bondurant owns three trains of "self-loaders."

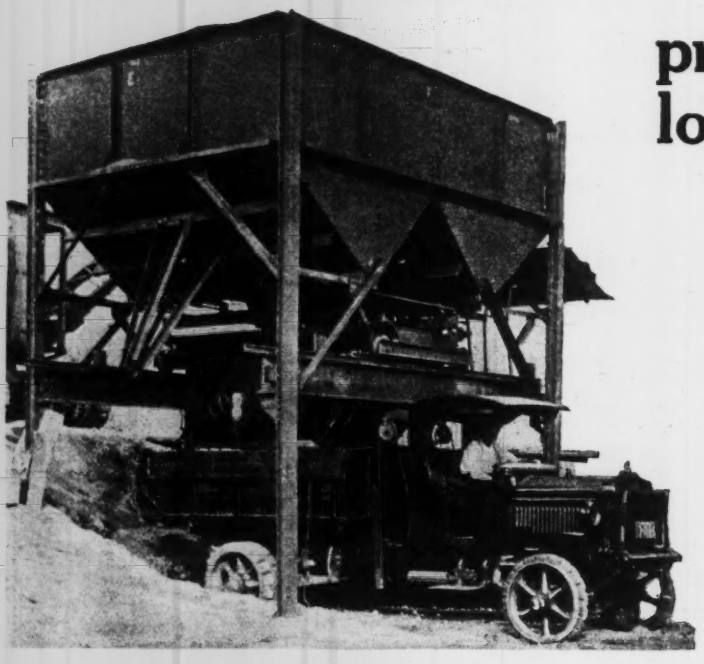
BAKER MANEY Self-Loading FOUR WHEEL SCRAPERS

Road contractors and road officials should learn of the splendid results and low operating costs of Baker Maneys.

Send for Catalog No. 96

The Baker Mfg. Co.
567 Stanford Ave., Springfield, Ill.

The AGGREMETER



For Any Type of Truck

proportions and loads any truck

Holds 85 tons of stone and gravel. Under *one-man* control, perfectly and rapidly proportions and loads material for any batch—into any type of truck body (single batch, dual or 2-3-4-5 compartment). The AggreMeter is all steel. Can be erected in one day using load-crane and 4 men.

Will last for years—not built for just one or two jobs. Enables contractor so to speed up trucks that fewer trucks do the same work and he gets about 10% more yardage finished road. Write us. Let us *point out in detail* why you cannot afford NOT to use the AggreMeter.

This plant proportioned and loaded into trucks 24 Batches in 11 min.—36 tons aggregate—enough to keep a 21 E Paver going 42 minutes.

Erie Steel Construction Co.
Erie, Pa., U. S. A.

The LOADØMETER

THE LOADOMETER is a portable weighing instrument, designed primarily for use by state and county officials for conveniently weighing trucks that are suspected of overload.

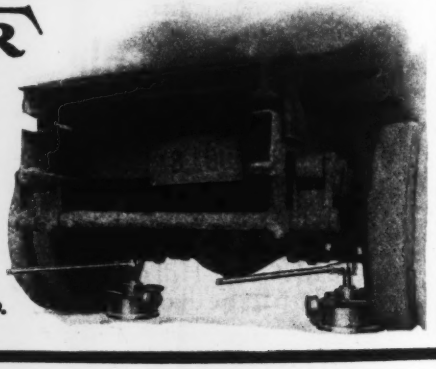
These instruments repay their original cost in a short time and are the means of saving thousands of dollars in road repairs

Loadometers are now being used in the majority of the states in the Union.

Descriptive booklet on request

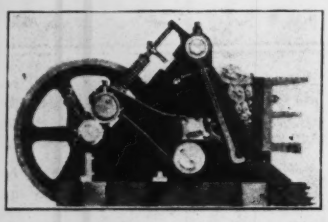
Manufactured by

THE BLACK & DECKER MFG. CO.
Towson Heights, Baltimore, Md., U.S.A.



Reliance
Road Building and Quarry Equipment

Have established a reputation for continuous SERVICE and satisfaction.



We manufacture a complete line including *Crushers, Elevators, Screens, Bins, Sweepers, Car-Unloaders, etc.* Write for Catalogue.

UNIVERSAL ROAD MACHINERY CO.
Kingston, N. Y.
141 Milk St., Boston, Mass. 114 Liberty St., New York, N. Y.
"RELIANCE" LABOR SAVING MACHINERY

ECONOMY
HOIST & BODY COMPANY Inc.

15 West 44th St.
New York City

Hoists and Dump Bodys complete ready to mount
1 and 1½-ton cap., 35 cu. ft. List.....$290
2 and 2½-ton cap., 54 cu. ft. List.....$325
F.O.B. Factory
Immediate Shipment

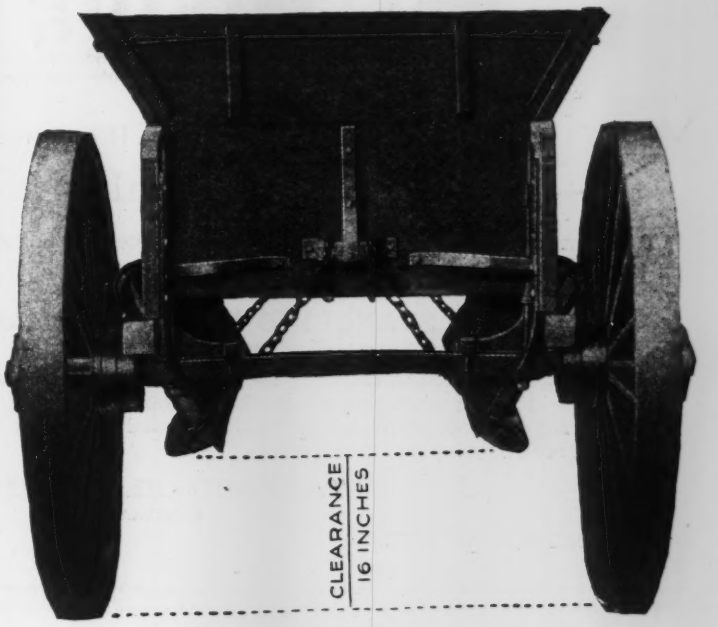
Hydraulic Hoists and Steel Bodies

Wood-Detroit equipment in use exceeds all other makes combined. Installed on any chassis. See page advertisement in June 22nd issue.

Wood Hydraulic Hoist & Body Co.
4196 Bellevue Avenue, **Detroit, Mich.**

"If ever you see a Watson stalled on the dump go to an Oculist. Yer eyesight ain't right!" Jim Fellowes

Look at that big 16 inch clearance J.F.



SIXTEEN inch clearance with the bottom down! That's another reason I'm so darn strong for the Watson Wagon.

Some dump wagon makers kick up a lot o' dust about havin' arched axles. Don't be deceived. It's nawthing but a smoke screen.

Their wagons has got such goldarn little clearance they have to make the axles arched. If they didn't they'd never get away from a load!

But don' ever let anyone tell you an arched axle's strong as a straight one. An ol' hoss could tell you better'n that.

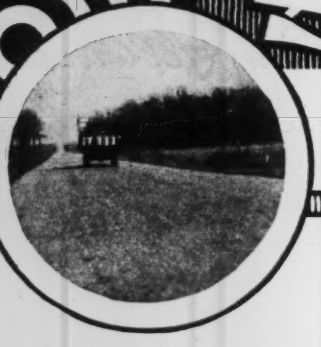
Watsons have got straight axles straight as a die. They're the strongest axles made. And Watsons have got a big 16 inch clearance even with the bottoms down. Don't need no hump backed axle to let 'em make a getaway.

If ever you see a Watson stalled on the dump go to the oculist. Yer eyesight ain't right.

WATSON DEPENDABLE DUMP WAGONS

Watson Products Corporation, Canastota, N. Y.

Stanolind Paving Asphalt



When You Build

Think of the Future

IT IS reasonable to expect that repairs will be necessary on any road that is in constant use for seven years.

The road illustrated above was built of

STANOLIND PAVING ASPHALT "C"

(Penetration Method)

during 1915, it has been in constant use ever since—but not one cent has been required for repairs. Consider that when you are thinking about a new road.

Send for our booklet Stanolind Paving Asphalt. It tells all about the proper construction of asphalt roadways.

STANDARD OIL COMPANY
(INDIANA)

910 SO. MICHIGAN AVE. CHICAGO, ILL.

THE HONHORST
Tar and Asphalt Heaters

Write for Description TAR WAGON *Prices and Pamphlet*

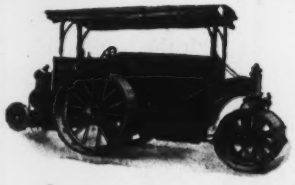
This heating kettle, called a Tar Wagon or Four-Wheel Kettle, meets the demand for a high grade portable kettle of large capacity, for transporting, melting, heating, boiling down or reducing any kind of oil, tar, pitch, asphalt, joint filler, roofing composition, bituminizing material, or patented paving filler.

The Kettle is semi-cylindrical, and made of ¼ in. boiler steel throughout, strongly braced with heavy angle iron. The firebox will burn any kind of fuel. Running gear, axles and wheels are the very best made, no expense being spared in perfecting them.

250, 350, 500, 700, 900 Gallon Capacities

THE JOS. HONHORST CO.
1020 W. Sixth St., Cincinnati, Ohio

REDUCE YOUR OPERATING COSTS



through the use of

ACME EQUIPMENT

Four-cylinder Motor Road Rollers

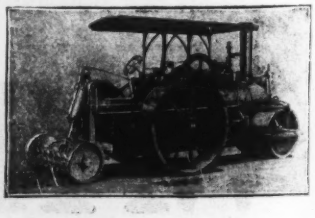
Portable and Stationary Crushing Plants
Gravel Screeners—Graders
Power Scarifiers

ACME ROAD MACHINERY COMPANY
Factory: Frankfort, N. Y.
Warehouse Distributors in all principal cities.

QUALITY ROLLERS
"Buffalo-Pitts" and "Kelly-Springfield"

In all types and sizes. steam and motor.

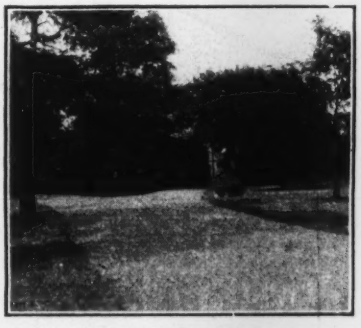
Buffalo - Springfield Pressure Cylinder Scarifiers can be built on new rollers or attached in the field to rollers already in service.



Inquiries Invited.

The Buffalo-Springfield Roller Co.
Springfield, Ohio

FOR PARKS AND PRIVATE ESTATES



Texaco Asphalt Drive,
Geo. A. McKinlock Estate, Lake Forest, Ill.

Just a few of the beautiful clubs, parks and private estates of America whose roads have been kept and maintained in ideal condition with TEXACO Asphalts and Road Oils:

The National Golf Links, Shennecock Hills, Long Island, N. Y.

J. N. Hill Estate, Long Island, N. Y.

A. B. Dick Estate, Lake Forest, Ill.

New York State Park Reservation, Niagara Falls, N. Y.

Forest Park, St. Louis, Mo.

Geo. A. McKinlock Estate, Lake Forest, Ill.

Artemus Ward Estate, Long Island, N. Y.

The major portion of the 90-mile park drive and boulevard system of Kansas City, Mo., is Texaco paved.

Grove Park Section, Asheville, N. C.

TEXACO Asphalts and Road Oils make ideal roads for private estates.

Write for literature!

TEXACO ASPHALT

THE TEXAS COMPANY

Asphalt Sales Department

17 Battery Place, New York City

New York
Philadelphia
Richmond
Boston

Jacksonville
Atlanta
New Orleans
Memphis

Chicago
Cleveland
Oklahoma City
Kansas City

Houston
Dallas
Minneapolis

For fast work—the MACON CONCRETE ROLLER

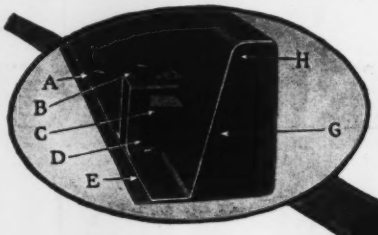
WHEN you finish concrete roads or streets you want, fast, perfect work by the simplest, and most economical method. With the "Macon Concrete Roller" finishing can be started the moment the wet mass is delivered to the road bed, and continued until the concrete has reached its maximum density, only obtained by the roller process.

Perfect concrete by the elimination of excess water.

Leased only by patentees and bearing our serial license number. Patent No. 1,302,275, validated March 2, 1921, Case No. 141 Northern District of Georgia. Decision affirmed, Case No. 274 Fed. 341, United States District Court of Appeals, New Orleans, La., February 24, 1922.

Moderate rental terms. Write for details.

Macon Concrete Roller Co.
Macon, Ga.
Patentees



The Strongest Road Rail

Note the Features of its Construction

A Numerous auxiliary stake-holes.
B 18-inch, mushroom-head stakes, ⅞-inch diameter.
C Instant-gripping stake-wedge, fastened to box.
D Heavy stake-box, riveted to flanges of rail.
E Web lapped, electrically welded, solidly riveted.
F 5¾-inch base flange—over 200 sq. in. greater bearing surface per rail.
G Stake-box riveted to face flange and base flange, adding strength and rigidity.
H Extra flange of continuous web; 11-guage steel—which gives tubular strength to rail, and unyielding support under battering of finisher and sub-grader.

Send for full Descriptive Literature

METAL FORMS CORPORATION
1445 Booth Street Milwaukee, Wis.

Metaform Road Rails

STANDARD *Asphalt Products*

Standard Asphalt Binder A *for surface treatment.*
Standard Asphalt Binder B *for penetration work.*
Standard Asphalt Binder C *for the mixing method.*
Standard Refined Mexican Asphalt *for sheet asphalt paving.*
Standard Asphalt Joint Fillers *for brick or block pavements.*
Standard Paving Flux, Standard Bridge Asphalt and Preserving Oils.

STANDARD OIL CO. OF NEW YORK
26 Broadway

Specifications and all other particulars furnished on request.

SOCONY ASPHALTS AND ROAD OILS

STEEL PAVING GUARDS

Protect the Edges of Streets, Roads, Curbs, Street Railways, etc.

Illustrated and descriptive booklets on request.

Sizes and Shapes adaptable to all types of paving.

W. S. Godwin Co., 14 E. Lexington St., Baltimore, Md.

FREE Information, Specifications and Literature, Expert Engineering Advice about

GRANITE

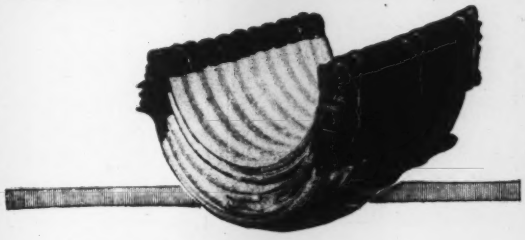
FOR PAVING AND CURBING

The Granite Paving Block Mfgrs. Assoc. of the U.S. Inc.
31 State Street, BOSTON, MASS.

Representing The World's Greatest Granite Quarries

LITTLEFORD

TAR AND ASPHALT HEATERS
FOR CONTRACTORS AND MUNICIPALITIES
CATALOG ON REQUEST
LITTLEFORD BROS.
415 E. PEARL ST. CINCINNATI, O.



24 feet of

"ACME" (NESTABLE)

<TONCAN> METAL CULVERTS

CORRUGATED

A full circle corrugated culvert 24 feet long requires several men to handle it.

A 24-foot "ACME" (Nestable) Corrugated Culvert as shown above can be handled by one man. Which do you think would decrease your maintenance costs the most?

Write for Booklet 24-M

Standard Since 1885

Consistent, Unfailing Service.

"IDEAL"

SEWER JOINT COMPOUND

FOR WATER-TIGHT SEWERS

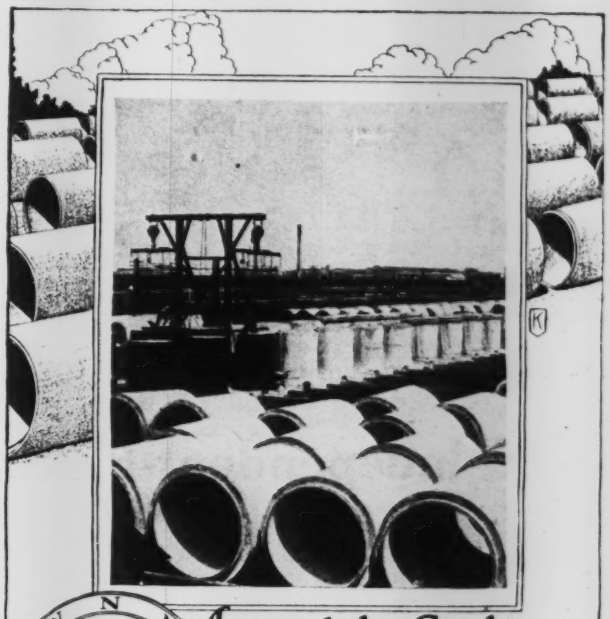
THE WARING-UNDERWOOD CO., FERNWOOD, PA.

NEWPORT CULVERTS

of Genuine Open Hearth Iron, with a proper admixture of Copper and generous coating of Spelter, are daily making new friends and substantiating our claims for superior strength and durability.

THE NEWPORT CULVERT CO., INC.

641 West Tenth St., Newport, Ky.



Around the Circle with LOCK JOINT

No. 5: South:

A GREAT deal of Lock Joint Pipe has been used by the cities of Dallas, Fort Worth, Houston, Port Arthur, Tex.; Monroe and Baton Rouge, La.

Some of these lines are sewers, some pressure lines, all of them giving perfect satisfaction.

Lock Joint Pipe Co.

Pressure, Sewer, Culvert and Subaqueous Pipe

Ampere, N. J.

LOCK JOINT

Reinforced

Concrete Pipe

If there ever has been a doubt

in your mind about the successful use of **Concrete Pipe** for sewers, drains and culverts let us destroy this doubt by sending you data on

Independent Reinforced Concrete Pipe For "PERMANENCE"

We can show you that **Concrete Pipe** as manufactured by the INDEPENDENT CONCRETE PIPE CO. is a permanent construction.

We can show you that from the Contractor's point of view **Concrete Pipe** can be laid faster and easier and more safely than many other sewer materials.

Allow us the pleasure of mailing you data on Independent Concrete Pipe

INDEPENDENT CONCRETE PIPE COMPANY
201 No. West St., Indianapolis, Ind.

7 Reasons for the Superiority of WESTON'S Gasket and Form for Tile Pipe

1. Trench can be partially backfilled before joints are made.
2. Sewer invert maintained **no sagging.**
3. Joints are absolutely root-proof.
4. Ordinary labor can easily produce perfect results.
5. Sewers can be laid in trenches where the pipe is half full of water.
6. The water tightness does not depend on the skill of the operator.
7. Inspector can tell at a glance whether or not the joint is properly filled.

Let us send you references from users, covering the past two years of Sewer work

L. A. WESTON
Adams, Mass.

The Completed Cement Joint

TRADE UNITED MARK

HIGH PRESSURE
Reinforced Concrete Pipe
built where it is to be laid, with Local Labor and Materials. Sizes from 24 inch up. Unlimited pressure. Your own specifications complied with. Sewer pipe also.
Send for Literature
United Concrete Pipe Co.
29 Broadway, New York

American Engineering and Construction Co.
2816 North Washtenaw Ave., Chicago
Engineers and Contractors
SEWERS AND SEWAGE-DISPOSAL PLANTS, TUNNELS, WATER PLANTS, ETC.
Government—Municipal—Railroads

Western

"The only dump wagon for steamshovel work is the Western." This is the verdict of steamshovel men everywhere. Ask them.

The Western Dump Wagon will stand up is light running; a boy can operate it.

WESTERN WHEELED SCRAPER COMPANY
Earth and Stone Handling Equipment
Aurora, Illinois.

THE SCOOP CONVEYOR

THOUSANDS IN USE

FOR STORING AND RECLAIMING, LOADING AND UNLOADING CARS, TRUCKS AND WAGONS
DOES THE WORK OF FROM 6 TO 12 MEN
AND KEEPS EQUIPMENT MOVING!
WRITE FOR LITERATURE

PORTABLE MACHINERY CO., PASSAIC N.J.

AM CRE CO
Creosoted Wood Products

Poles Timbers Cross Ties — *Piling Lumber Paving Block*

LOWRY PROCESS

The Standard of Creosoting Practice

Our eighteen years of experience qualify us to consult with you on every creosoting need.

Write for information or quotations.

American Creosoting Co., Inc.
LOUISVILLE, KENTUCKY

Colonial Creosoting Co., Inc.
BOGALUSA, LOUISIANA

Georgia Creosoting Co., Inc.
BRUNSWICK, GEORGIA

PLANTS—Manville, N. J.; Paterson, N. J.; Rome, N. Y.; Livingston Manor, N. Y.; Toledo, Ohio; Indianapolis, Ind.; Bloomington, Ind.; Russell, Ky.; Marion, Ill.; Kansas City, Mo.; Springfield, Mo.; Hugo, Okla.; Shreveport, La.; De Ridder, La.; Bogalusa, La.; Brunswick, Ga.; New Haven, Conn.

CREOSOTING

EPPINGER & RUSSELL CO.

Office: 165 Broadway, New York

TREATING PLANTS at JACKSONVILLE, FLA., and LONG ISLAND CITY, NEW YORK.

MANUFACTURING PLANTS in FLORIDA. PRODUCTS, Yellow Pine Lumber, Timbers, Ties, Piles, Telegraph Poles, etc., also Cypress.

LARGE STORAGE YARDS and DOCKS, free WHARVES.

WE SOLICIT YOUR INQUIRIES

WE CREOSOTE railroad ties, piles, poles and wood paving blocks in any quantity at our **NEWARK, N. J.,** plant. We can make deliveries at the buyer's convenience, as we keep a large stock of untreated material on hand. Our prices will satisfy you. American Creosoting Company, 17 Battery Place, New York.

American Creosote Works

INCORPORATED

New Orleans, La. (Station B)

Creosoted cross arms, Lumber, Paving Blocks, Piles, Poles and Ties. Private free wharf for ocean vessels at New Orleans. Capacity 100 million feet board measure annually.

Plants at New Orleans, La., Louisville, Miss., and Winnfield, La.

Untreated Material	Years
LUMBER:	
Chestnut	12
White Oak	8
Elm	7
Ash	5
Maple	4
Birch	4
Poplar	4
Cottonwood	4
Tupelo	4
Basswood	4
White-heart Beech	4
Red Gum	4
Sycamore	3

Untreated Material	Years
POSTS:	
Locust	25
Osage Orange	40
Mulberry	20
Catalpa	14
Chestnut	10
White Oak	8
Red Oak	5
Ash	5
Aspen	5
Gum	3

Untreated Material	Years
TIES:	
Black Locust	20
White Oak	8
Chestnut	7
White-heart Beech	4
Birch	4
Maple	4
Red Oak	4
Gum	3

The estimates here presented are based on experience and actual inspection by the Forest Products Laboratory.

Here is the life of Untreated Wood

—placed subject to decay

The question is—what is the life of *properly treated wood?*

Well—the Clinton Woolen Mfg. Co., of Clinton, Michigan, increased the life of timbers on their dye house from five years to ten, with a brush treatment. The Consolidated Coal Co., Saginaw, Michigan, report that untreated mine timbers decayed in from one to two years.—while treated timbers "never showed any signs of rot." Messrs. C. Deutermann & Son, White Plains, N. Y., made sills for their ice house last twenty years instead of the usual five. In the Bellevue Mine specimens fourteen years old were still perfect (average life, two years). The Northwest Paper Co. of Cloquet, Minn., increased the life of ceiling boards from one and one-half to ten years. A user of oak posts increased their life from five to eighteen years. A user of spruce wharf planking in Rhode Island, from one to ten years. The Cleveland Marine Ry., (Fla.,) made barge sheathing last nineteen years instead of the usual two! They used simple methods of application and chose the best preservative—Protexol.

Think it over. Then write for data (based on thirty-five years' experience) regarding methods of treatment and Protexol Wood Preservatives.

PROTEXOL CORPORATION

***Successor to* Carbolineum Wood Preserving Co.**

35 Barclay St., New York
Works: Kenilworth, N. J.

AIRCO

Oxygen
—
Acetylene
—
Carbide
—
Nitrogen
Argon
and other
Atmospheric
Gas Products
=
Airco-Davis-
Bournonville
Welding and Cutting
Apparatus and
Supplies
—
Acetylene
Generators
—
Specially Designed
Machines for
Automatic Welding
and Cutting

DAVIS APPARATUS

"Airco Oxygen and Acetylene Service Is Good Service"

Airco District Offices
and Distributing Stations

An Airco Distributing Station is located in each of the following cities. District Offices are located in cities indicated by a star (*).

Albany, N. Y.
*Atlanta, Ga. 43 Houston St.
*Boston, Mass. 122 Mt. Vernon St. Dorchester
Baltimore, Md.
Bethlehem, Pa.
Bridgeport, Conn.
Brooklyn, N. Y.
Bronx, N. Y.
*Buffalo, N. Y. 730 Grant St.
*Chicago, Ill. 2236 So. Lumber St.
*Cleveland, O. 1210 W. 69th St.
Cincinnati, O.
Coatesville, Pa.
Columbus, O.
Defiance, O.
Des Moines, Ia.
*Detroit, Mich. 7991 Hartwick St.
Duluth, Minn.
East Chicago, Ind.
East St. Louis, Ill.
*Emeryville, Calif. Park Ave. and Halleck St.
Erie, Pa.
Ft. Wayne, Ind.
Gloucester, N. J.
Grand Rapids, Mich.
Hartford, Conn.
Indianapolis, Ind.
Jersey City, N. J.
Johnstown, Pa.
Joplin, Mo.
Kansas City, Mo.
Lebanon, Pa.
*Los Angeles, Cal. 4th and Main Sts.
Louisville, Ky.
Madison, Ill.
Milwaukee, Wis.
*Minneapolis, Minn. 327 25th Ave., S. E.
New Haven, Conn.
*New York, N. Y. (Metropolitan District) 342 Madison Ave.
Jersey City
Brooklyn, N. Y.
Bronx, N. Y.
Norfolk, Va.
*Oklahoma City, Okla. P. O. Box 1338
Paterson, N. J.
Peoria, Ill.
*Philadelphia, Pa. Germantown and Allegheny Aves.
*Pittsburgh, Pa. 2515 Liberty Ave.
Portland, Ore.
*Richmond, Va. P. O. Box 1192
San Francisco, Calif.
*Seattle, Wash. 3623 E. Marginal Way
Sharon, Pa.
Springfield, O.
*St. Louis, Mo. 115 Plum St.
Tacoma, Wash.
Terre Haute, Ind.
Toledo, O.
Tulsa, Okla.
Warren, O.
West Quincy, Mass.
Youngstown, O.

Air Reduction Sales Co.
Mfr. of Airco and Airco-D-B products
Controls the Manufacture and Sale of National Carbide
Home Office:
342 Madison Ave., New York, N. Y.

"The Most Efficient Timber Handling Plant in the World"
LAWSON & MacMURRAY
LUMBER & TIMBER
HOBOKEN Offices, Mills & Yards NEW JERSEY

15.000.000 feet always in stock for immediate delivery

Proof
Against
Frost
Damp
Acids
Alkalies
Water—Rust

MOGUL

Quick
Drying
Pliable
Elastic
Odorless
Insulator
Preservative

EST. 1893 A. G. ROTHWELL

Famous for 30 Years

Trade Mark Registered

Preserves ANY Metal or Masonry from corrosion or erosion or wood against dry rot from ANY cause, under ANY condition. Its success has been so perfect that any printed statement here would seem exaggerated and almost unbelievable. Let us send you actual service records and names of users. MOGUL is specified by the U. S. Government.

MOGUL PRODUCTS CORPORATION
50 Church Street, New York City, U. S. A.

BUY LUMBER
Minus Middlemen's Profit

We manufacture lumber products for every purpose—forms, guardrails, guardrail posts, timbers for tunnel work, ties, piling 20 to 40 feet. Our stocks are large—our prices low—buy *NOW* and save money and time.

Buy Direct and get PROMPT SHIPMENT

BUY DIRECT OF

KREETAN COMPANY, Inc.
Main and Sommer Streets, North Tonawanda, New York

Creo-pine BLOCK FLOORS

FLOORS THAT LAST!
Creo-pine Block Floors outlast the plant and effect maximum floor economy. Assure freedom from floor repair or replacement costs.
Southern Wood Preserving Company, Atlanta, Ga.
Creo-pine conduit, cross arms, fence posts, cross ties, timber and piling.

The Wyckoff Pipe & Creosoting Co., Inc.
General Creosoters—Established 1881.
Creosoted Wood Block, Conduit, Cross-Arms, Anchor Blocks, Poles, Cross Ties, Piling, Wharf Timbers, Bridge Timbers, Lumber, etc., Water Pipe, Steam Pipe Casings, Liquor Log.
Main Office: 17 East 42nd Street, New York, N. Y.
Factory: Portsmouth, Virginia

ALLEN RIVETERS
Can be depended upon to produce the maximum number of good rivets with the least consumption of power.
Send for Latest Catalog.
JOHN F. ALLEN CO., 372 GERARD AVE., NEW YORK

Cut out the lost motion in

nut turning

By using a
FAVORITE
Reversible Ratchet Wrench
Does not leave nut until seated or removed. Cannot slip.
GREENE, TWEED & CO., 109 Duane St., New York

CARBIC
Powerful **LIGHTS** Portable
CARBIC MANUFACTURING CO.
DULUTH CHICAGO NEW YORK BOSTON

Only reliable products can be continuously advertised

STEEL BARS

FOR

REINFORCING CONCRETE

WE MANUFACTURE

PLAIN, TWISTED AND DEFORMED SQUARES—ALSO PLAIN AND DEFORMED ROUNDS

BARS CUT TO EXACT LENGTHS WITHOUT EXTRA CHARGE
BENDING DONE AS REQUIRED

IMMEDIATE DELIVERIES ASSURED—ALL SIZES CARRIED IN STOCK

BUFFALO STEEL COMPANY

TONAWANDA, NEW YORK

WHY WASTE?

money, time, labor and material on temporary shores which can only be used on one or two jobs and must be cut or spliced as the case may be for the varying heights. Every change in height is costing money and wasting labor and material Hodges-Adjustable Shores eliminates this waste. Their eight years' service has proved their economy, durability and performance to be unequaled.

Complete information furnished on request.

HODGES-EDELMAN CO.
2610 Union Central Bldg., Cincinnati, O.

Hex Coupling for bolting forms true to line and for joining round rods.

THIS MARK

On a Casting

—means that it's made of Marion certified malleable iron, offering great resistance to shock, having high elastic limit, resisting oxidation, wears better, is free from slag holes, shrinkage cracks, etc., and is not subject to fatigue or crystallization.

Malleable iron castings for every purpose.

The Marion Malleable Iron Works
Marion, Indiana

LACLEDE STEEL COMPANY

St. Louis, Mo.
CONCRETE REINFORCING BARS

Works:
Madison, Illinois
Alton, Illinois
East St. Louis, Ill.

General Offices:
1317 Arcade Building
St. Louis, Mo.
Chicago Office: 208 S. La Salle Street
Kansas City Office: 228 Scarritt Bldg.

Steelcrete
CONCRETE REINFORCEMENT

EXPANDED Metal versus Bars—a Booklet of facts for every Concrete Engineer—free.

The Consolidated Expanded Metal Co's
BRADDOCK, PA.
Pittsburgh Chicago Phila. New York

TRUSCON METAL SASH PUTTY

Standard for all Metal Sash

Over 15,000,000 Pounds used

THE TRUSCON LABORATORIES - DETROIT

UNIVERSAL SAFETY TREAD

STEEL OR BRASS FILLED WITH LEAD

A non-slip, non-removable lead surface presented at all stages of wear. Effective as a truly "**safety**" tread throughout entire depth. Remember, the **lead** at all times forms the principal wearing and tread surface. The steel (or brass) frame simply holds the lead and retards rapid wear. Can be used wherever a real safety tread is desired. Made in sections up to 12 inches wide in one piece.

Write for latest Catalog

UNIVERSAL SAFETY TREAD CO., 40 COURT STREET, BOSTON, MASS.

MISSISSIPPI WIRE GLASS

For protection against Fire and Breakage

Mississippi Wire Glass Co.
218 Fifth Ave.,
New York

Chicago St. Louis

"ANTI-PLUVIUS"

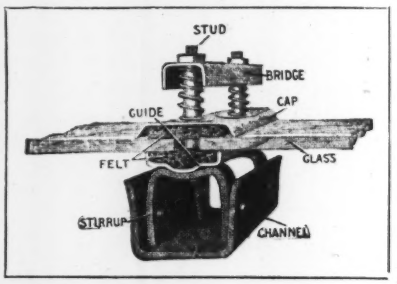
Puttyless Skylight

Stops excessive glass breakage. No glass comes in contact with metal. Always tight and weather proof.

Built with a supporting frame of hot-rolled, high carbon structural steel.

No maintenance expense.

Write us today for booklet and specification sheet.



Millions of square feet now in use on all types of buildings in all parts of the world.

The G. DROUVE CO., Bridgeport, Conn.

CEMENTILE ROOFS

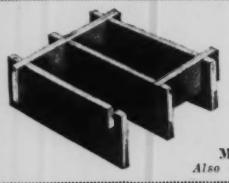
The FIRST COST is the LAST

AMERICAN CEMENT TILE MANUFACTURING CO.
OLIVER BUILDING
PITTSBURGH, PA.

TECHNICAL PAINTS

for every purpose. Bridge Paints and Metal Preservative Paints of all kinds. Fume Resisting, Acid Resisting, Heat Resisting, Mill White, Concrete Paints, etc.

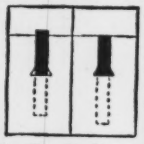
CHEESMAN-ELLIOT CO., INC., *Paint Makers*
Established 1876
23 Flatbush Ave., Brooklyn, N. Y.
Works: Williamsport, Pa., and Brooklyn.



"MITCO"

INTERLOCKED GRATINGS

No bolts. No rivets. No bent metal. Every joint locked by metal spread in dovetail. No clogging. Write for data. See half page advertisements.



Mitchell-Tappen Co., 15 John St., N. Y.
Also makers of "S.M.C." Standardized Metal Caging.

ROBERTSON PROCESS METAL

A Rust and Corrosion-Proof Building Material for

Permanent Roofs, Siding and Trim

Write for Sample

H.H. Robertson Co., Pittsburgh, Pa.

TRADE MARK REG. U.S. PAT. OFF.

STEEL CONSTRUCTION FOR LIGHT AND VENTILATION IN BUILDINGS

SIDE WALL STEEL SASH

All types for factory, power house and office. Continuous steel sash for monitors and sawtooth construction. Operating devices for all types of movable sash and doors. Steel skylight and ventilators, steel office partitions, hinged steel doors, sliding steel doors.

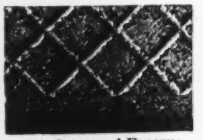
ALLISON STEEL PRODUCTS CO.
CHESTER, PA.

FERALUN

Anti-Slip Treads

Stair Treads
Floor Plates
Door Saddles
Manhole Covers
Etc., Etc.

American Abrasive Metals Co.
New York, N. Y., 48 Church Street



It's Iron and Emery Cast Together

KERLOW

·50·CHURCH·STREET·NEW YORK·

GRATING PRODUCTS

100% **Efficient (for traction)** 78% **Open (for ventilation)**
100% **Steel (for strength)** 22% **Surface contact (for comfort)**
Two work Surfaces (for longevity)

SHEETS

KEYSTONE COPPER STEEL

American Bessemer—Open Hearth—Keystone Copper Steel
Black Sheets, Galvanized Sheets, Special Sheets, Corrugated Sheets, Formed Roofing Products, Tin and Terne Plates, Etc.

AMERICAN SHEET AND TIN PLATE COMPANY, PITTSBURGH, PA.

PENNSYLVANIA SLATE

"CENTURIES OF SERVICE"
PYRAMID NATURAL SLATE STRUCTURAL
Proof against Time - Wear - Water - Fire!

for all Industrial purposes

Our service does not consist only of the prompt delivery of the slate. Through a complete and fully illustrated series of publications we provide basic specifications and detailed drawings to assist in securing the most satisfactory installation of:

Toilet Enclosures, Stairs, Urinals, Shower Stalls, Laundry Tubs, Sinks and Sink Tops, Switchboards, Fuse Blocks, Bus Bar Supports and Panel Boards.

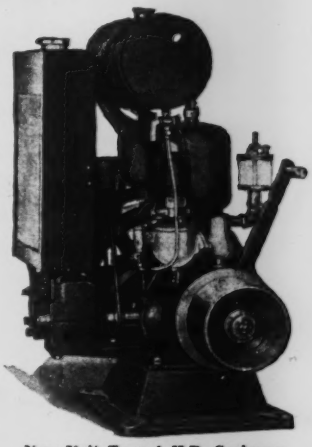
The Structural Slate Co.
Pen Argyl, Penna.

Your Machine Will Deliver Better Service with a

CUSHMAN

Light Weight Heavy Duty Engine

Over 50,000 in successful service. Sizes 1½ to 20 H.P. Let our engineers work with you. Write us your power problem.



New Unit Type 4 H.P. Cushman Weight, complete, 230 lbs.

Cushman Motor Works
801 N. 21st St.
Lincoln, Nebr.

TRADE MARK
IRVING SUBWAY
[PATENTED] REG. U.S. PAT. OFF.
THE FIREPROOF VENTILATING FLOORING

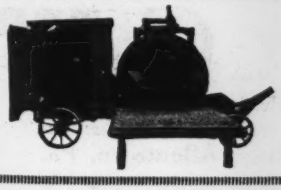
IRVING IRON WORKS CO.
LONG ISLAND CITY. N.Y..U.S.A.
Write for Catalog 3A5

TRADE MARK
IRVING SAFE TREAD
[PATENTED] REG. U.S. PAT. OFF.
ABSOLUTELY NON-SLIPPING ALWAYS

KEYSTONE
Patented

Stop! Look!! READ!!!
Your real profit is what is left after all costs are paid. Reduce your mixing costs and your net profits will increase. This machine will cut costs. Ask for Bulletin No. 10-E.

Gray Iron Foundry Co.
READING, PA.



"THE STANDARD" Low Charging Concrete Mixers, and a full line of Contractors' Equipment—Hoists, Pumps, Engines, Carts, etc.
Catalogue M-2 on application

THE STANDARD SCALE & SUPPLY COMPANY
1631 Liberty Ave., Pittsburgh, Pa.

UNIVERSAL FORM CLAMPS

For all kinds of concrete forms. Speedy, simple, economical, secure. Low in first cost. Indestructible. Six sizes. Write for free sample and prices.

UNIVERSAL CLAMP CO.
15 N. May St., CHICAGO
George Bendixen, Representative
51 East 42nd St., N. Y.

SONNEBORN PRODUCTS

Not the cheapest in Price, but the cheapest in Service. Standard for twelve years.

LAPIDOLITH
TRADE MARK

Makes Concrete Floors

Dustproof and Wearproof and resistant to acids and alkali.

Over 250,000,000 square feet of concrete floors lapidolized thus far.

Write for samples and testimonials to Dept. 6

L. SONNEBORN SONS, Inc.
116 Fifth Avenue, New York

SONNEBORN

INFORMATION GLADLY FURNISHED

FOR CORRECT METHODS OF USING CONCRETE

VULCANITE PORTLAND CEMENT CO

PHILADELPHIA BOSTON NEW YORK

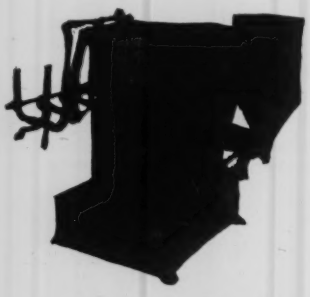
Soon Pays for Itself
The Rest Is Profit

The Century Bag Cleaner

beats the inside of the bag with the opening down.

ALL the cement is dislodged from the corners, seams and cloth, and readily drops out.

The quickness, ease and thoroness of this method gives the greatest possible saving in cement, time and labor.



Style B Power Driven

You also save the freight paid in sending your own cement back to the mill.

We supply hand or power machines. The power machine operates from a light-socket.

Well-known engineering firms use The CENTURY BAG CLEANER as standard equipment for each contract.

A descriptive circular giving prices and further information will be mailed you on request.

The Willsea Works

Successor to The Century Cement Machine Co.

Manufacturers of special machinery and machines for making concrete blocks and trimming stones.

60 Brown's Race, Rochester, N. Y.

HENDRICK SCREENS

for every purpose

ELEVATOR BUCKETS (plain and perforated) **STACKS AND TANKS**
GENERAL SHEET AND LIGHT STRUCTURAL WORK
LIGHT AND HEAVY STEEL PLATE CONSTRUCTION

HENDRICK MFG. CO. CARBONDALE, PENNA.

New York Office, 30 Church St. Pittsburgh Office, 544 Union Arcade Bldg.
Hazleton, Penna., Office, 705 Markle Bank Bldg.

PENNSYLVANIA
PORTLAND CEMENT

Highest Quality

Manufactured by

Pennsylvania Cement Co.

New York Boston Philadelphia Buffalo

Business Established 1832

The Lawrence Cement Co.

No. 302 Broadway New York, N. Y.

Selling Agents for

Dragon
PORTLAND CEMENT

In Successful Use a Third-Century

CEMENT-GUN Trade Mark

And the Traylor Portable Compressor

See our full page ad in the last issue and in the next issue.

Cement-Gun Co., Inc., Allentown, Pa.

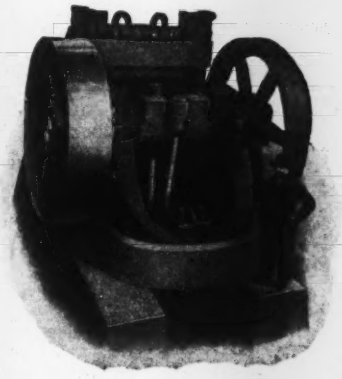
ANTI-HYDRO FOR PERMANENT CONCRETE HARDENS WATERPROOF

FOR HARDENING & WATERPROOFING CONCRETE

A liquid integral hardener makes concrete dustless and waterproof. Used successfully for eighteen years. Write for details.

ANTI-HYDRO WATERPROOFING COMPANY, Newark, N. J.

ENDURINGLY EFFICIENT



TRAYLOR
Bulldog Jaw Crusher

Exclusive, patented features; Simple, strong pitman, Frictionless toggle system, Self-aligning bearings, Scientifically reinforced frame, General accessibility of all parts.

Used and Approved the World Over

YOU SHOULD HAVE BULLETIN 99N

TRAYLOR ENGINEERING AND MANUFACTURING COMPANY
ALLENTOWN, PA.

NEW YORK 30 Church St. | PITTSBURGH 1133 Fulton Building | CHICAGO 1414 Fisher Bldg. | LOS ANGELES Citizens Nat. Bank Bldg. | SPOKANE 616 Mohawk Building
BIRMINGHAM Brown-Marx Building | NEW ORLEANS 1215 New Hibernia Bank Bldg. | SALT LAKE CITY Dooly Building
TRUCK & TRACTOR DIVISION: CORNWELLS, PA. EXPORT DEPT.: 104 PEARL ST., NEW YORK

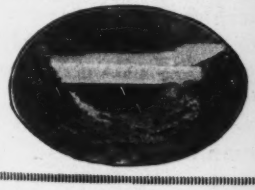
MILBURN
CARBIDE LIGHTS
FOR CONSTRUCTION WORK

Burn carbide, obtainable everywhere.

Write for Catalog No. 21

The Alexander Milburn Co.
1420-1428 W. Baltimore St., Baltimore, Md.
STOCKS IN ALL LARGE CITIES.

New England Foundation Co., Inc.
120 Tremont Street, Boston, Mass.
SIMPLEX CONCRETE PILING
Open Caissons—Difficult Foundations
Engineering and Construction



AMBURSEN DAMS
Solve Difficult Foundation Problems
Highest Built, 156 feet. Lowest Built, 6 feet.
Longest Built, 8,000 feet. Shortest Built, 25 feet.
Send for Cost Data, Literature, Photos.
Ambursen Construction Co.,
Incorporated
New York Atlanta Kansas City

Because it's compressed concrete—

—the MacArthur Pedestal Pile is not only dense, but in the form of its pedestal it conforms to the soil around it, besides compacting that soil itself to a high degree. Moreover, there is the gripping action of the ROUGH concrete surface of the shaft—16 in. in diameter over its entire length.

Have you written for a copy of the "MACARTHUR FACTS"?

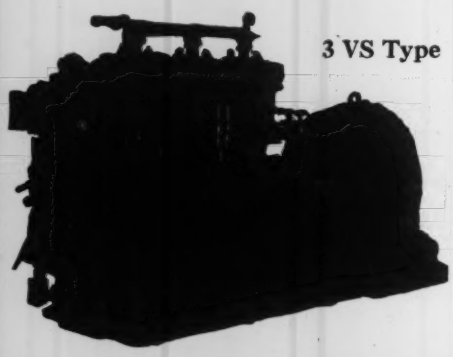
MacARTHUR
CONCRETE PILE & FOUNDATION CO.
Inc.
12 John Street, New York City
Chicago
Pittsburgh
Cleveland, Ohio
Montreal, Que.
Canadian MacArthur Concrete Pile Co., No. 10 Catheart Street
Montreal, P. Q.

WESTINGHOUSE — NATIONAL
AIR COMPRESSORS

Compact-ness!

COMPACTNESS is a desirable feature of design peculiar to all types of Westinghouse-National Air Compressors. They occupy less floor space in proportion to air output than any other machine. If space is an important consideration you will find your interests best served by a WESTINGHOUSE-NATIONAL.

Westinghouse-National Air Compressors are furnished in all sizes from 11 to 550 cu. ft. piston displacement; stationary and portable types; A.C. or D.C., motor. Especially adapted for factories, foundries, garages, office buildings, railway shops and yards, printing plants, etc. Literature on request.



3 VS Type

Westinghouse Traction Brake Company
General Offices and Works: Wilmerding, Pa.

OFFICES:

Boston, Mass.
Chicago, Ill.
Columbus, O.
Denver, Colo.
Houston, Tex.
Los Angeles
Mexico City
St. Louis, Mo.
St. Paul, Minn.
New York
Pittsburgh
Washington
Seattle
San Francisco

9-B
driving precast reinforced concrete piles

—for Geo. B. Spearin, Inc., for the Flatbush Ave. Extension. These are 20-in. square tongued and grooved piles from 50 to 70 feet long, driven through (A) hard beach sand and (B) underlying strata of hard blue clay, on which the latter two powerful water jets had little effect.

Other large contractors working nearby are doing their driving the McKiernan-Terry way.

Bulletin 28 covers all our hammers.

McKiernan-Terry Drill Company
Rock Drills, Pile Hammers, Lifting Jacks, Mining and Quarrying Machinery
13 Park Row, New York
Works at Dover, N. J.

Agencies in the following cities:
Boston Chicago Pittsburgh
Cleveland Detroit St. Paul
San Francisco Columbus, O.
New Orleans Philadelphia
Portland, Oregon

Foreign Representatives:
British Steel Piling Co., London, England

Smith, Hauser & MacIsaac, Inc.
CONTRACTORS
18 East 41st Street, New York, N. Y.
Aqueducts, Subways, Dams, Railroad Work, Docks and Piers, Shafts and Tunnels.

Spencer, White & Prentis
100 West 41st St., N. Y. C.
Foundation Specialists
Steel Tubes to Rock ***"Pretest" System***

The Underpinning & Foundation Co. 342 Madison Ave. New York City
Difficult Foundations
Pneumatic, Steel, Concrete and Wooden Pile Foundations. Bridge Piers; Underpinning Heavy Buildings
"HERCULES" STEEL PILES

Parsons, Klapp, Brinckerhoff & Douglas
84 Pine St., New York — Hanna Bldg., Cleveland
WM. BARCLAY PARSONS, EUGENE KLAPP — HENRY M. BRINCKERHOFF, WALTER J. DOUGLAS
Engineers—Constructors—Managers
Design, Estimates, Supervision, Operation and Management, Examination and Reports

OUR small size excavators are making money for the pit owner with a 100-ton per day market, just as our larger installations are for the car-load gravel shipper. **Write for booklet.**

SAUERMAN BROS.
53 Jackson Blvd., Chicago

SAUERMAN DRAGLINE CABLEWAY EXCAVATORS
dig, convey, elevate and dump in one operation

Here's Your Copy
a Catalog on
Pile Driving
Latest Suggestions for
Pile Driving, Steel Sheeting, Bearing Piles, Etc.
Send for Your Copy Now
National Hoisting Engine Co.
Office and Works: **Harrison, New Jersey**

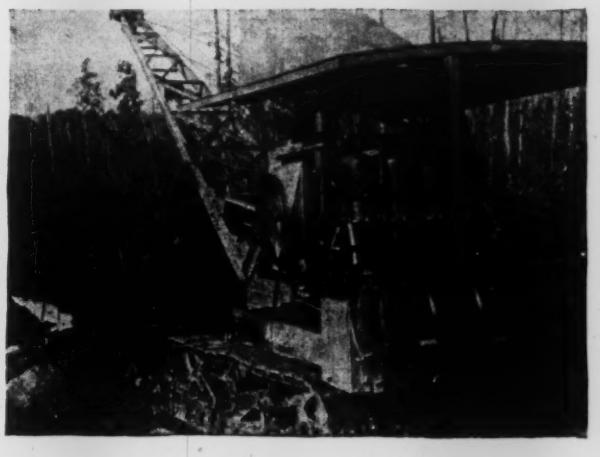
BAY CITY MOTOR CRANE CONVERTIBLE. Operates ⅝-yd. clamshell, skimmer scoop, ditcher scoop, dragline, shovel, magnet, or hook.

CRANES
EXCAVATORS
LAND DREDGES
Walking, Track Crawler and Floating Type
BAY CITY DREDGE WORKS
2600 Center Ave., Bay City, Mich.

THE UNION LINE
Consists of pile driving, excavating machinery, road builders, and contractors' equipment.
See larger advertisement second issue of each month.
Union Iron Works
Lackawanna Siding, Hoboken, New Jersey

GRAY STRAND WIRE ROPE
ELECTRICALLY WELDED WIRE
Wickwire Spencer Steel Corporation
Worcester, Mass. **Buffalo, N. Y.**
District Offices and Warehouses
New York Philadelphia San Francisco Detroit Tulsa, Okla. Chicago **Boston**

VULCAN IRON WORKS
THE WARRINGTON (VULCAN)
STEAM PILE HAMMERS
PILE DRIVERS AND PILE DRIVING MACHINERY
327 NO. IRVING AVE. CHICAGO



Mobility—*counts big in drainage work*

ON CLEANOUT jobs, where ability to move quickly and easily from job to job is as important as the actual work done, the Northwest Crawler Dragline puts money in the contractor's pocket.

Whatever the job, the Northwest makes every moment count from beginning to end. It loads itself on a flat car—no dismantling necessary. It then unloads itself and goes directly to the job over bad land. It gets right down to its task quickly, handling a ¾ or 1-yard bucket on a 35 or 40-foot boom. One man, assisted by the sturdy Northwest, does the work from start to finish. Let us show you how you can make the smallest job produce a bigger margin of profit by doing it the Northwest way.

Northwest Engineering Company
Works: Green Bay, Wisconsin
General Sales Offices: 28 E. Jackson Blvd., Chicago
Eastern District Sales Office: 303 Singer Bldg., New York City

The Northwest Engineering Company of Green Bay, Wisconsin, manufacturers of Crawler Cranes and Draglines, announces the removal of the General Sales Offices to 1220 Steger Building, Chicago. Mr. W. W. Mutter, Vice President, has assumed active charge of this office. Activity in the fields reached by the Northwest organization has increased to such a degree that it has been found necessary to operate nights at the Green Bay plant to supply the demand for Northwest products.

NORTHWEST
crawler crane—dragline—pile driver

Ready for a twelve-mile jaunt—

The above photograph shows the Monighan Excavator walking right off the car under its own power—no Cables or Ropes.

It's ready now for a twelve-mile jaunt to the job—twelve miles over rough roads and mud holes, but the Monighan can be depended upon to steadily step right along until it gets there.

And when it gets on the job it will move a bigger yardage because there are **no delays due to traction**—no matter what the condition of the ground.

The Monighan will save you labor, save you planks—it will minimize delay—and save you trouble (lots of it).

It walks—it's easy to handle.

You should investigate.

Monighan Machine Co.
2024 Carroll Ave., Chicago, Ill.

Proportioned for Fast Work

Every detail of the Stroudsburg Engine is designed to take full advantage of the 125 pounds boiler pressure.

Stroudsburg Hoisting Engines

Ask any Stroudsburg user what kind of service he gets—from the engine and the works.

STROUDSBURG ENGINE WORKS
66 North 3rd Street, Stroudsburg, Pa.

Dredging

Filling, Land Reclamation, Canals and Port Works

River and Harbor Improvements, Deep Waterways and Ship Channels

We are equipped to execute all kinds of dredging, reclamation and port works anywhere in the United States.

CONTRACTORS to THE FEDERAL GOVERNMENT

Correspondence Invited from Southern Officials and Corporate and Private Interests Everywhere.

Largest Plant Longest Experience

Atlantic, Gulf and Pacific Co.

NEW YORK 21 Park Row
HOUSTON, TEXAS Scanlon Bldg.

P&H TRENCH & DRAGLINE EXCAVATORS
PORTABLE CRANES
PAWLING & HARNISCHFEGER CO.
MILWAUKEE, WIS.

LIDGERWOOD TWO-SPEED HOISTS

STEAM—ELECTRIC—BELT DRIVEN

For Operating Slack Line Drag Bucket Excavators

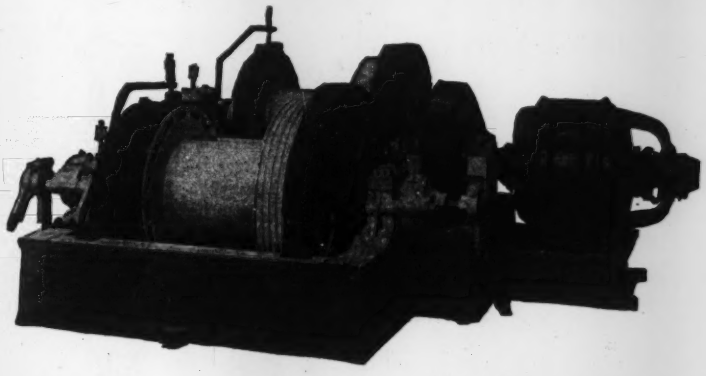


Illustration shows our two-speed electric hoist built in sizes up to 200 H.P. for operating slack line drag line buckets up to and exceeding two yards capacity.

Bucket work is hard on the engine.

The general design of the Lidgerwood Bucket Hoist and the design of each individual part has the strength to meet the severe service of Slack Line Drag Bucket Work.

HOISTS **CABLEWAYS** **DERRICKS**

Requests for Catalogs invited

LIDGERWOOD MANUFACTURING COMPANY

96 Liberty Street, NEW YORK, N. Y.

Chicago Pittsburgh Philadelphia Cleveland Detroit San Francisco Los Angeles
London, England Sao Paulo, Brazil Apartado 812, Mexico, D. F.

TRADE MSC MARK

Get the Catalog

FLORY HOISTS

S. FLORY MFG. CO., BANGOR, PA.

New York: 95 Liberty St.
Hartford, Conn.: K. B. Noble Co.
Chicago: Monadnock Bldg.
Birmingham, Ala.: Chas. T. Lehman Co.
Huntington, W. Va.: Banks Supply Co.
Pittsburgh: House Bldg.
Buffalo, N. Y.: Finlay Wheeler, Inc.

Roebling Welding Wire

For Electric Welding
For Oxy Acetylene Welding

John A. Roebling's Sons Company
Trenton, N. J.

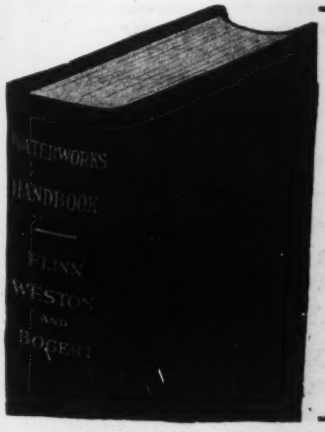
Dobbie Derricks

and Hoists

Stock of Fittings, Blocks, Sheaves, Winches, etc., carried by our agents—

G. S. Green Co., New York.
Beckwith Machinery Co., Pittsburgh, Cleveland, Charleston, W. Va.
P. I. Perkins Co., Boston.

DOBBIE Foundry & Machine Co.
Manufacturers
Niagara Falls, N. Y.



A Standard Authority

The busy engineer, superintendent and designer will find in this standard guide all the facts, tables, and methods that will help answer any water system question.

The book covers sources of water supply, collection of water, transportation and delivery of water, distribution of water and character and treatment of water.

Flinn, Weston and Bogert's WATER-WORKS HANDBOOK, $6.00

See this book for 10 days FREE

McGraw - Hill Book Co., Inc.
370 Seventh Ave.
New York.

You may send me on 10 days' approval. Flinn's Waterworks Handbook $6.00 net, postpaid.

I agree to remit for the book or return it postpaid within 10 days of receipt.

Member Am. Soc. C. E.

Signed.....

Address.....

Official Position.....

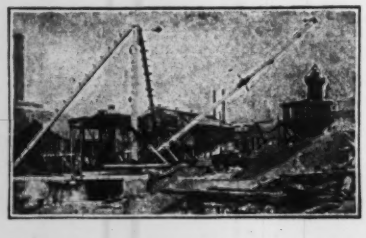
Name of Company.....

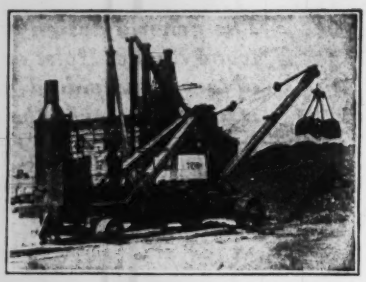
(Book sent on approval to retail purchasers in U. S. and Canada only.) F.N.R.

TERRY

Builders of the highest type

DERRICKS *and* CRANES



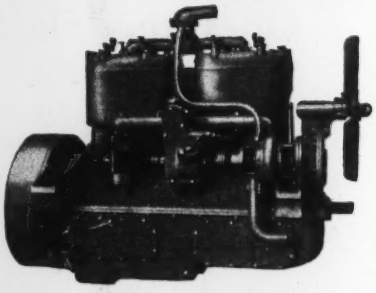


TERRY Manufacturing Company

Grand Central Terminal, New York City

Plant—Kearny, Newark, N. J.

Here's a Record Worth Considering When You Buy Engines



No User of Climax Engines Has Ever changed to Any Other Make

Moderate Speed—Heavy Duty—30 to 70 H.P.
Kerosene or Gasoline

CLIMAX

"The Trustworthy Engine"

Write for Catalog

Climax Engineering Co.

3 W. 18th Ave., Clinton, Iowa

Manufacturers of Internal Combustion Engines for Automotive and Industrial Power Purposes

IMPROVED

CRANES *and* DERRICKS

Setting entirely new standards of value in material-handling equipment.

Standard and special types for all purposes incorporating exclusive features.

Design and workmanship backed by 50 years' engineering and manufacturing experience.

Lowest initial and operating cost.

Penn Bridge Company, 101 Park Ave., New York

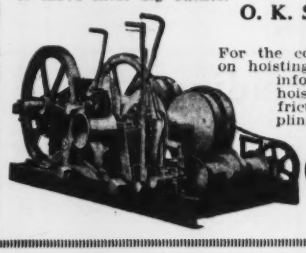
Shops: Beaver Falls and Claysville, Pa.

If they're O. K. HOISTS they're HOISTS

O. K. GASOLINE HOISTS

Do the work of much larger steam outfits—save labor—save operators' wages—save hauling coal and ashes and extra work required to move these big outfits.

O. K. Single and Double Drum Electric Hoists



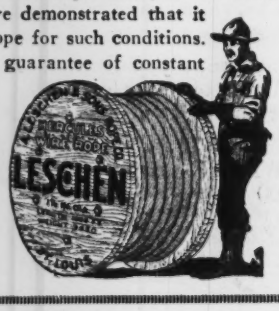
For the contractor who wants real facts on hoisting economies we have ready the information that will help him cut hoisting costs. We also produce friction clutches and cut-off couplings.

O.K. CLUTCH & MACHINERY CO.

Columbia, Pa.

A Service Tested Wire Rope

The use of HERCULES (Red-Strand) Wire Rope on heavy duty equipment is not an experiment, for its many years of actual service have demonstrated that it is a safe and economical rope for such conditions. Its one red strand is our guarantee of constant quality.



Established 1857

A. LESCHEN & SONS ROPE CO.

St. Louis, Mo.

New York, Chicago, Denver, San Francisco

The WILEY WHIRLEY

Derrick—Crane—Dragline

See large advertisement last week and next week.

Glen M. Wiley, Dayton, O.

PARSONS

TRENCH EXCAVATORS—BACKFILLERS

THE PARSONS COMPANY

NEWTON, IOWA

The W-S-M Engine

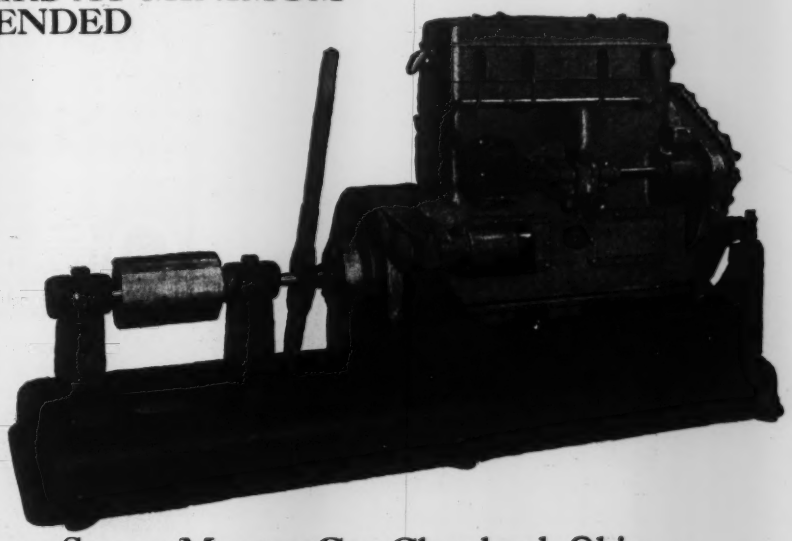
An engine developed by the foremost experts in this field with long life, simplicity, ruggedness, and accessibility as major considerations.

REBORING OF CYLINDERS ELIMINATED. REPLACEABLE CYLINDER LINERS AT MINIMUM COST. NO EXTENDED SHUT DOWN.

Many superior features of design.

Illustration shows full-power take-off for belt drive.

Bulletin on Request.



The Wellman-Seaver-Morgan Co., Cleveland, Ohio

LOCOMOTIVE CRANES
CLAM SHELL BUCKETS · SHIPBUILDING CRANES
CAR DUMPERS · PILE DRIVERS
THE McMYLER INTERSTATE CO.

CRANES All Types All Sizes

CAR DUMPERS

Pile Drivers—Clam Shell Buckets

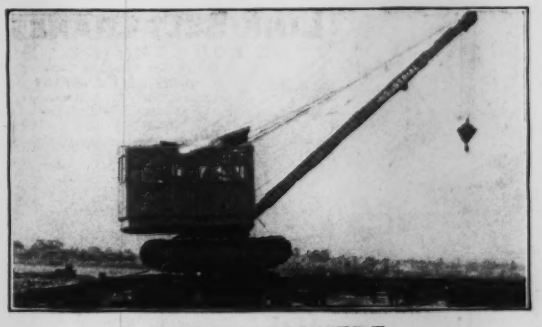
The McMyler Interstate Co.
Cleveland, Ohio

BRANCH OFFICES: New York City, 1756 Hudson Terminal Bldg.; Chicago, Ill. 812 Edison Bldg.; Seattle, Wash., Hoge Bldg.; Denver, Colo., 18th and Wazee Sts., San Francisco, Calif.; 407 Merchants Exchange Bldg.; New Orleans, La., 444 Maison Blanche Annex; Birmingham, Ala., Brown-Marx Bldg., Boston, 261 Franklin St.

Byers Model "10" Full Circle Crane

Exclusive boom-raising device permits changing radius under load, while lifting, rotating or traveling without stopping the crane.

The Byers Machine Co.
250 Sycamore St., Ravenna, Ohio



GOES ANYWHERE

The Type BC "INDUSTRIAL" CRAWLING TRACTOR CRANE illustrated is backed by half a century of crane building success, and is pre-eminently adapted to the needs of road contractors, railroad reclamation and storage yards, lumber and coal dealers, gravel, sand and stone producers, foundries, and moderate-size manufacturing plants.

The propelling mechanism is especially powerful in this Crane, allowing it to travel up steep grades and over heavy going. The large tractor belts distribute its weight so it travels with equal facility over city pavements, ordinary dirt roads and industrial storage yards. These belts allow the Crane to readily pass over railroad tracks and larger obstructions.

Of especial convenience to contractors is this Crane's ability to propel itself up an inclined skidway onto a flat car where it may be transported without dismantling further than to remove the boom and the projecting muffler.

Have you a copy of our Catalog No. 113?

INDUSTRIAL WORKS
BAY CITY, MICHIGAN

NEW YORK 50 Church St. · **PHILADELPHIA** Widener Bldg.
CHICAGO McCormick Bldg. · **DETROIT** Book Bldg.

F. H. Hopkins & Co., Montreal and Toronto, Canada

Locomotive, Erection and Wrecking Cranes, 5 to 200 tons capacity. Pile Drivers, Pillar Cranes, Transfer Cranes, Gantry Cranes, Crawling Tractor Cranes, Rail Saws, Grab Buckets, Double-Acting Steam Pile Hammers, Wood Grapples.

Prompt deliveries can be made on any type of crane

O. S. DEPENDABLE

7-Ton and 12-Ton Crawling Tread Cranes

One of the Outstanding Features of the O. S. Dependable Crawling Tread Cranes is the *Initial Economy* effected by their installation.

You don't have to rearrange your yard to accommodate them—

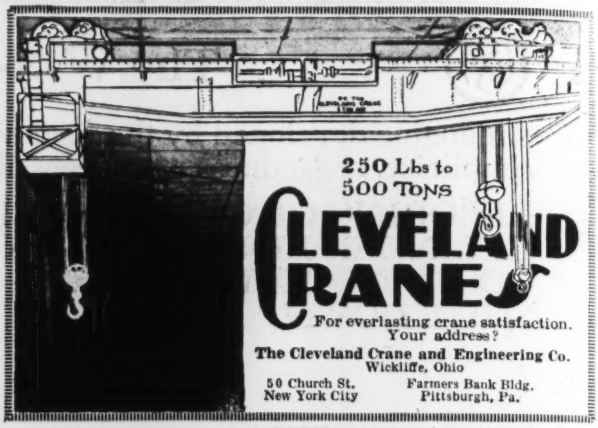
You save the expense of laying a railway track; it is not even necessary to surface the yard with planking or concrete.

O. S. Dependable Crawling Tread cranes travel on any kind of ground surface.

Catalog gladly sent on request

ORTON & STEINBRENNER COMPANY

Main Office: Chicago, Ill. **Factory: Huntington, Ind.**



250 Lbs to 500 Tons

CLEVELAND CRANES

For everlasting crane satisfaction. Your address?

The Cleveland Crane and Engineering Co.
Wickliffe, Ohio

50 Church St., New York City
Farmers Bank Bldg., Pittsburgh, Pa.

OHIO LOCOMOTIVE CRANES

OHIO LOCOMOTIVE CRANE CO.

LINK-BELT CRANES

FOR SERVICE

Write for catalog

LINK-BELT COMPANY

Philadelphia, Chicago, Indianapolis, Offices in principal cities. 783

ELESCO SUPERHEATERS

save fuel and increase capacity on Steam Shovels and Small Locomotives.

Ask for full information and H-Series Bulletins.

THE SUPERHEATER CO.

General Offices: 17 E. 42nd St., New York

Chicago: People's Gas Bldg. Pittsburgh: Union Arcade Bldg.
For Canada: The Superheater Co., Ltd., Montreal

BROWNING LOCOMOTIVE CRANES

A Giant's Strength With a Wizard's Deftness

THE BROWNING COMPANY
East 162nd St. & Waterloo Rd
Cleveland, Ohio

Ask for

NEW BEDFORD

"Good Rope Since 1842"

We do not claim it is "the best in the world." But certainly you can depend upon it—ABSOLUTELY—to return full value from every foot for every dollar invested. Interesting rope data on request.

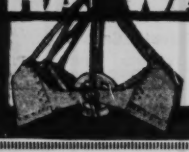
New Bedford Cordage Co.
120 Broadway, New York, N. Y.
Mills: New Bedford, Mass. Established 1842

"TOLEDO CRANES"

Fulfill Every Requirement
Save Time, Labor and Space

THE TOLEDO CRANE CO.
BUCYRUS, OHIO

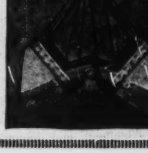
HAYWARD BUCKETS



Clam Shell, Orange Peel, Electric Motor, and Drag Scraper Buckets for all excavating, dredging, and rehandling purposes. Ask for Catalog 43, or consult our engineers gratis.

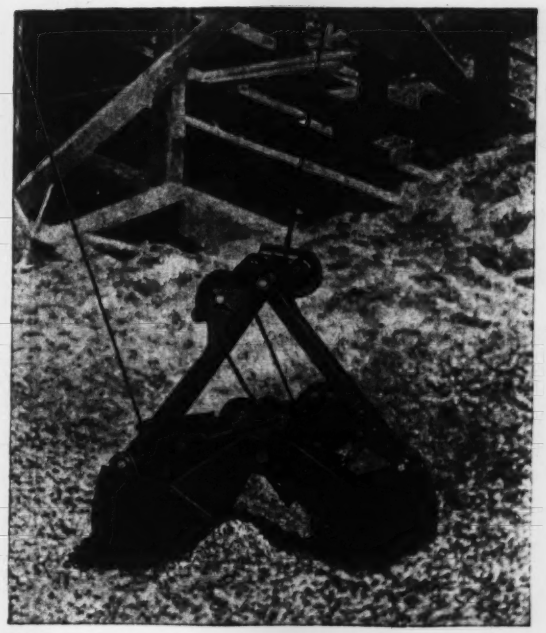
The Hayward Co., 48-50 Church St., N. Y.

KIESLER



Adaptable to all general purposes. Their performance and mechanical excellence has made them the choice. *Send for our bulletins.*

Jos. F. Kiesler Co., Chicago, Ill.



"Have used a number of WILLIAMS Clamshells, we are working several now, and

"Have *always* received 100% service from WILLIAMS Buckets"

writes Vang Construction Co., Cumberland, Md.

Contractors have learned to depend on any WILLIAMS Bucket as a **good** bucket—properly designed and well constructed.

Plenty of strength for continuous service under hard conditions.

WILLIAMS principles of construction have been worked out in 25 years of bucket-building experience. These principles are sound, as proved by many remarkable WILLIAMS records. **Many WILLIAMS buckets are still doing good work after 10, 15 and 20 years of continuous use.**

Why take chances—why experiment—when you can be sure of 100% service from your bucket equipment? Profit by the experience of the many successful contractors who have made careful tests and comparisons—and now use WILLIAMS Buckets exclusively.

Write for the WILLIAMS Catalog. It shows many photos of WILLIAMS Buckets doing every kind of clamshell work—some of them doing work you never thought any clamshell could do! It also gives blue-prints and specifications of every bucket in the complete WILLIAMS line. **Ask for Catalog N.**

G. H. WILLIAMS CO., Erie, Pa., U. S. A.

If your crane has only one bucket drum, the WILLIAMS Single Line Bucket is the one you need. Like other WILLIAMS Buckets it has:

The large one-piece hinge bearing which takes the place of 5 moving parts found on most clamshells.

The closing action is quick and powerful because of the tandem arrangement of the sheaves on the Power Arm—makes the cable overhaul much shorter, and speeds up the opening and closing of the scoops.

WILLIAMS

QUICK-ACTING CLAMSHELLS

All Parts Guaranteed Against Breakage

VULCAN

Clamshell and Orange-peel Buckets

Dredging Buckets, Hydraulic Dredging Equipment. Complete Dredges. All work designed and finished in our own plant. Backed by 50 years' experience. Repairs to all types of Buckets and Dredges.

Write for new catalog—just published.

VULCAN Iron Works, Inc.
Jersey City, N. J.

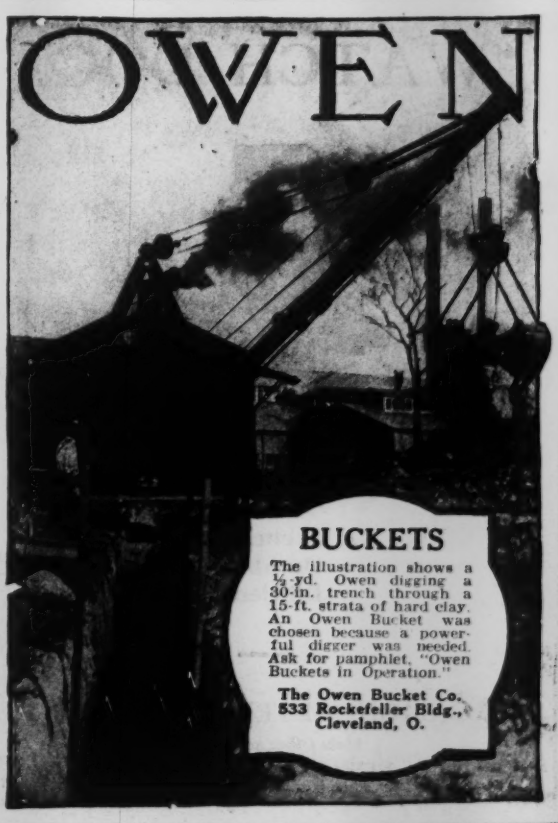
LAKEWOOD CLAM SHELLS

for digging, dredging and handling - send for descriptive bulletin

The Lakewood Engineering Company
Cleveland, U. S. A.

Construction Equipment
Steel Towers, Clamshell Buckets, Heavy Duty and Small Motors, Gas Trucks

OWEN

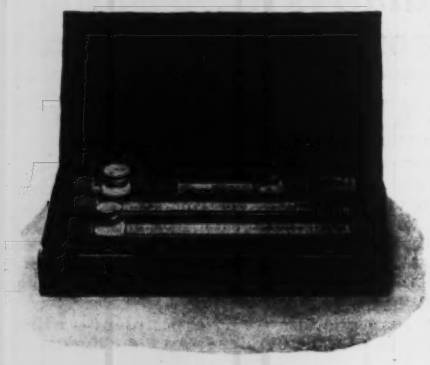


BUCKETS

The illustration shows a ½-yd. Owen digging a 30-in. trench through a 15-ft. strata of hard clay. An Owen Bucket was chosen because a powerful digger was needed. Ask for pamphlet, "Owen Buckets in Operation."

The Owen Bucket Co.
533 Rockefeller Bldg.,
Cleveland, O.

VENTURI



Color and Turbidity of Water Determined with Accuracy

Water is often "colored" by vegetable matter or "turbid" from mud and silt carried in suspension. When water is used for a municipal supply, color and turbidity are always objectionable; when furnished to industries either quality is usually harmful to the products.

The U. S. Geological Survey Design Color and Turbidity Determining Instruments based on the Platinum-Cobalt methods of color measurement devised by Allen Hazen, C. E., make possible at small cost the scientific determination of color and turbidity of water.

We are prepared to furnish complete sets of these Instruments packed in neat, pocket-size cases ready for immediate use in the field.

Send for Bulletin No. 41

Builders Iron Foundry, Providence, R. I.

NEW YORK CHICAGO SAN FRANCISCO TORONTO PITTSBURGH LOS ANGELES OTTAWA ATLANTA PORTLAND, ORE. DALLAS

86

"WATCH DOG"

WATER METERS

Accurate
Durable
Efficient

GAMON METER COMPANY
Main Office and Works:
NEWARK, NEW JERSEY

SIMPLEX Venturi Tube METERS

For checking up reciprocating pump performance and determining slippage due to imperfection or wear in valves; for measuring delivery of centrifugal pumps and figuring pumping station efficiency; for distributing proportionately the cost of water supplied to several districts; for checking up the performance of filter beds; for detecting waste; for recording daily amounts of sewage handled, and planning future extensions, etc., etc.

SIMPLEX VALVE & METER CO.
5722 Race St., Philadelphia, Pa.

In These Abnormal Times

Information in respect to Commercial Credits and Investment Securities is most essential.

A highly developed Credit Department and an Investment Securities Department are only two of the useful features of the service which we render to customers.

The Coal and Iron National Bank
of the
CITY OF NEW YORK
Capital, Surplus and Profits, $3,000,000

Member N. Y. Clearing House Assn.
Member Federal Reserve System

NEPTUNE

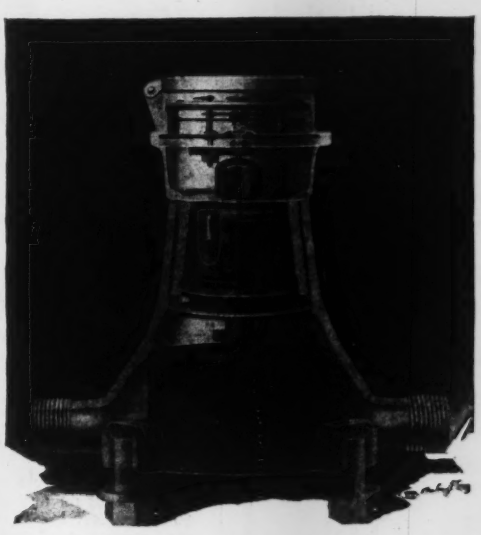
The Pioneer of Progress

Originators of the Oil Enclosed Gear Train

ORIGINATORS
of the Frost-Proof Meter

ORIGINATORS
of Anti-Friction Disk Thrust Roller Construction

ORIGINATORS
of Snap Joint Disk Chamber Construction



ORIGINATORS
of the Compound Meter

ORIGINATORS
of Renewable and Heat-Proof Rubber Bushings on All Bearings

ORIGINATORS
of the Portable Test Meter

It is Interchangeable

The Trident Oil Enclosed Gear Train Eliminates Corrosion.

The oil around the gears does not freeze in the Trident Oil Enclosed Gear Train.

Greater accuracy—longer life—increased revenue are assured by the Trident Oil Enclosed Gear Train.

Foreign Matter cannot lodge in the protected Trident Oil Enclosed Gear Train.

Wear is eliminated by correct lubrication in the Trident Oil Enclosed Gear Train.

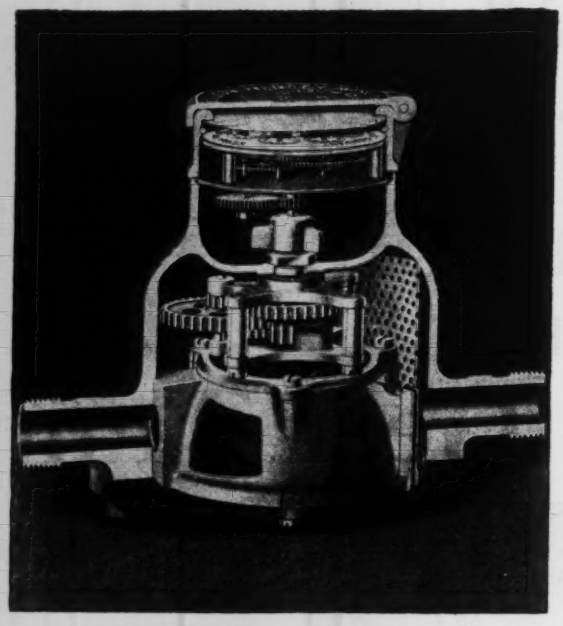
Neptune Meter Company

Pioneers in Meter Progress

New York City

Boston Chicago San Francisco Atlanta Los Angeles Seattle Portland Cincinnati

Trident Interchangeability applies to every part of every Trident Meter



HERSEY DISC METER, MODEL HF which is the Highest type of Frost protected Meter and HERSEY DISC METER, MODEL HD which is the Highest type of Divided or split-case Meter, are the product of thirty-five years' experience and refinement in the manufacture of Water Meters. These Models excel all Meters of all makes in all those essentials which go toward making exceptionally desirable Meters.

HERSEY MANUFACTURING COMPANY
Boston, New York, Chicago, Columbus, O., Philadelphia, Atlanta
San Francisco Los Angeles

WATER METERS

KEYSTONE
KEYSTONE TYPE "W"
ARCTIC FROST BOTTOM
EUREKA
KEYSTONE COMPOUND

If it is a **Water Meter** service these meters will handle it satisfactorily.

Pittsburgh Meter Company
General Office and Works
East Pittsburgh, Pa.

SALES OFFICES:
New York: 50 Church St.
Chicago: 5 So. Wabash Ave.
Kansas City: Mutual Bldg.
Columbia, S. C.: 1433 Main St.
Seattle: Railway Exch. Bldg.
Los Angeles: Union Bank Bldg.

Stevens Water Level Recorders and Indicators

for water power plants, tides, irrigation, city water supply, sewers and drains.

Let Stevens Recorders plot your Hydrographs

Direct Acting, Long Distance, Duplex and Differential Recorders and Indicators, Transits and Levels.

Bulletins on request

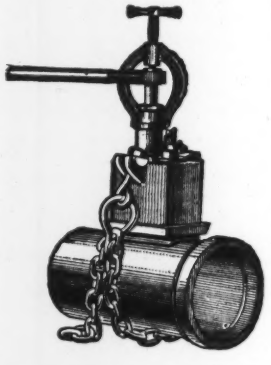
LEUPOLD VOELPEL & CO.
109 East 70th St., N., Portland, Ore.
Hydrographic and Surveying Instruments

Easily Carried By One Man

This light, durable machine will be sent on approval for 30 days trial. If not as represented, send it back.

Corporation Tapping Machine

Write for latest bulletins of this and other waterworks appliances.



The A. P. Smith Mfg. Co.
East Orange, N. J.

SLUICE GATES
Shear, Flap and Butterfly Valves
FLEXIBLE JOINTS
COLDWELL-WILCOX CO
NEW WINDSOR NEWBURGH N.Y.

Nicholas Engel
JOHN FOX & CO.
Cast-Iron Water, Gas and Flange Pipe, Special Castings, Fire Hydrants, Valves, Genera' Foundry and Machine Work.
Woolworth Building, 233 Broadway NEW YORK CITY

KENNEDY
Water Gates, Fire Hydrants, Gate Valves
have demonstrated their efficiency, reliability and low maintenance cost in installations throughout the country. 500 different sizes and types. Send for Catalog.
The Kennedy Valve Mfg. Co., Elmira, N. Y.
New York Boston Chicago San Francisco 211

1803 R. D. Wood & Co. 1921
400 Chestnut St., Philadelphia

Cast Iron Pipe
Special Castings
For water, Gas and High Service

Mathews Fire Hydrants
Gate, Foot and Check Valves
Loam Castings
Hydraulic Tools
Gas Producers

TRADE JENKINS MARK
Jenkins Bros

Go into service— and STAY

Because Jenkins Valves are designed, made, and tested for the maximum service, not merely for the average, they go into service and *stay*. For boiler blow-off service or for handling heavy fluids.

Know genuine Jenkins Valves by the signature and Jenkins "Diamond" cast on the body — at supply houses everywhere.

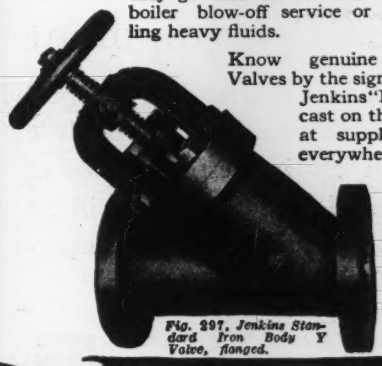


Fig. 297. Jenkins Standard Iron Body Y Valve, flanged.

JENKINS BROS.
New York
London
Boston
Philadelphia
Chicago
Montreal

Jenkins Valves
SINCE 1864 2429-J

CHAPMAN

Valves—Sluice Gates
Floor Stands—Hydrants

Standard and Special Equipment that is backed by 50 years' experience.

Send for Bulletin 38.

The Chapman Valve Mfg. Co.,
Indian Orchard, Mass.
Branches in Principal Cities

VALVES

72-Inch and Smaller

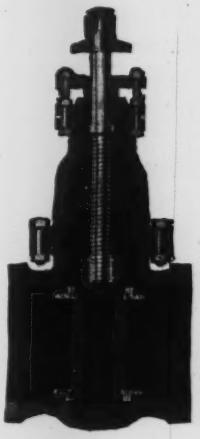
RENSSELAER VALVE CO.
TROY, N. Y.

POWELL VALVES

THE WHITE STAR VALVE
The Wm. Powell Co., Cincinnati, O.

LUDLOW

Double Gate Valve



FEATURES

of Ludlow Double Gate Valves, one of our best known products:

1—Simple in construction—few parts.
2—No locking or wedging of gates till directly opposite port of valve opening.
3—No grinding or dragging faces of gates on seats.
4—No binding of stem in wedge.
5—No stripping thread from stems.
6—Less wear of faces and gates.
7—Work equally well with pressure on either side of gate.

The question is—

how long will the valve stay watertight?

The answer is—almost forever—if it's a Ludlow. Add together points 2, 3 and 6 of the above seven reasons and you have the reason why. Little wonder then that Ludlow Valves are used so widely and satisfactorily all over the country!

Have you secured your copy of the NEW Ludlow Catalog?

The Ludlow Valve Mfg. Co.

Troy TRADE LUDLOW MARK **New York**

BRANCHES:
New York—62 Gold Street
Boston—112 Water Street
Philadelphia—Harrison Building
Pittsburgh—First National Bank Building
Chicago—633-635 The Rookery
Kansas City Office—R. A. Long Building

Southern Representative:
W. F. Wilcox, American Trust Building, Birmingham, Ala.

GRAVITY PRESSURE

FILTERS

DRY FEED
CHEMICAL MACHINES

Write for Bulletins 19-2-3

The total daily capacity
of municipal filtration plants
installed by us is
ONE BILLION GALLONS
Supplying 500 communities

THE NEW YORK CONTINENTAL
JEWELL FILTRATION COMPANY
NUTLEY, NEW JERSEY

111 W. Monroe St., Chicago, Ill.
New Birks Building, Montreal.

Originators of Mechanical Filtration

Member Associated Manufacturers of Water Purifying Equipment.

Water for New York City leaving the Kensico Reservoir is treated with Liquid Chlorine and W & T Equipment

W & T Equipment

has made Chlorination standard practice in water purification. We publish an interesting series of Technical Bulletins that will be sent on request to anyone interested in Water Purification.

WALLACE & TIERNAN
COMPANY, INCORPORATED
Manufacturers of Chlorine Control Apparatus
NEWARK NEW JERSEY

ROBERTS FILTERS

WATER—*fit for use*
Filtration and Water
Softening Plants
ROBERTS FILTER MFG. CO.
DARBY, PA. *New York Office. Flat Iron Bldg.*

WATER SOFTENING AND
FILTRATION PLANTS
INTERNATIONAL FILTER CO.
333 West 25th Place, Chicago
New York Office: Woolworth Bldg.

GRAVER
Steel Tank and Plate Work
HEADQUARTERS
Steel Tanks and Steel Plate Work

Water Softeners, Filters
and Heaters
Water Softeners for Boiler Feed-Water. Hot Process, Cold Continuous, and Zeolite Softeners. Pressure and Gravity Filters. Water Heaters. We make all successful types.
GRAVER *Corporation*
East Chicago, Indiana

WATER SOFTENING
AND FILTRATION PLANTS
AMERICAN WATER SOFTENER COMPANY
4th and LEHIGH AVES. PHILADELPHIA, PA.
No affiliation or working agreement with any of our competitors

EBG
Liquid Chlorine
Electro Bleaching Gas Co.
PIONEER MANUFACTURERS of LIQUID CHLORINE
Plant NIAGARA FALLS, N.Y.
Main office 18 East 41st Street New York · Chicago office 11 So. La Salle St.

Clean Water Mains
Deliver Full Capacity
We are glad to confer with municipal officials or Water Companies.
National Methods are patented
National Water Main Cleaning Company,
54 Church Street New York

CHLORIDE OF LIME

For Purifying Water

Pennsylvania Salt Mfg. Company, Philadelphia, Pa., U. S. A.

MICHIGAN

PIPE

Joint
Simplicity means
Low Cost in Handling
Low Cost of Installation
No Cost for Maintenance

Shipped immediately from stock.

The Michigan Pipe Co.
Dept. 17, Bay City, Michigan

Oklahoma City, Okla., 105 W. 16th St.; New York City, N. Y., 17 E. 42nd St.; Chicago, Ill., Leiter Bldg., 15 E. Van Buren; Boston, Mass., Room 737, Oliver Bldg.; Cleveland, Ohio, 919 Ulmer Bldg.; Chattanooga, Tenn., 702 James Bldg.; Philadelphia, Pa., 318 Widener Bldg.; Pittsburgh, Pa., 323 Fulton Bldg.

AMERICAN WOOD PIPE

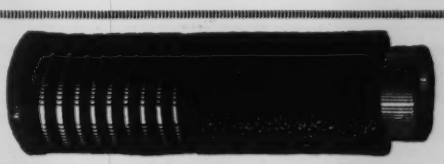
Wire wound and continuous stave wood pipe for—

Irrigation
Water Works
Railroads
Mines, Etc.

Water pipe—made of clear Washington Yellow Fir. Steam pipe casing—made of Washington Cedar, asbestos or tin lined for insulating underground steam pipes.

Write for Catalog.

AMERICAN WOOD PIPE CO., TACOMA, WASH
Eastern Office: 30 Church St., New York City



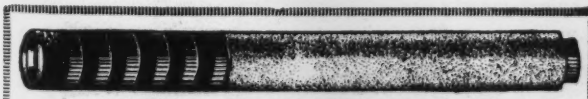
Wyckoff Wood Pipe

Carries 14 to 20% more water than iron or steel and lasts longer.

Frost and corrosion proof. Send for our Catalog for full details.

A. Wyckoff & Son Company, Elmira, N. Y.

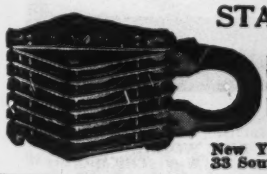
H. H. White, 1503 Fourth Natl. Bank Bldg., Atlanta, Ga.; Johnson-Peters Co., Pittsburgh Terminal Warehouse, Pittsburgh, Pa.; Valley Supply Co., Coal Exchange Bldg., Scranton, Pa.



"STANDARD" WOOD PIPE

Will furnish Pipe to suit Conditions.

Standard Wood Pipe Company, Williamsport, Pa.



STAR BRAND BLOCKS

Are Standard

For any lift or difficult working condition they are safest, strongest and most durable.

Boston & Lockport Block Co.
108 Condor St., East Boston, Mass.

New York City, 33 South St. Chicago, 413 Fort Dearborn Bldg.

PACIFIC REDWOOD AND DOUGLAS FIR PIPE

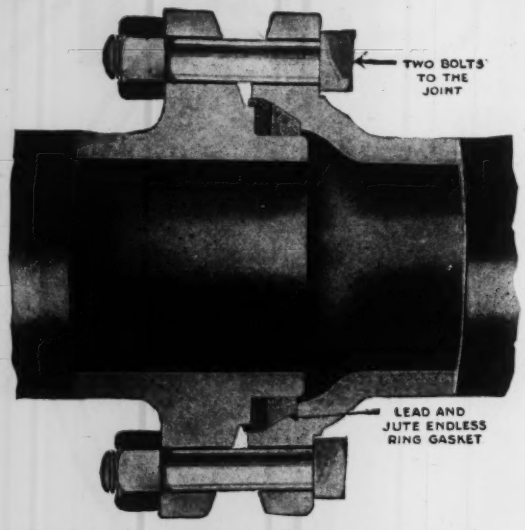
Made in all sizes from 2 inch to 14 feet in diameter

Write for Catalogue

PACIFIC TANK & PIPE CO.
THE STANDARD SINCE '80

8 Rector St., New York, 308 Market St., San Francisco
169 Washington St., Chicago

Two-Inch Cast Iron Pipe



Simplex Joint cut open to illustrate its construction

Write for Illustrated Literature

American Cast Iron Pipe Co.

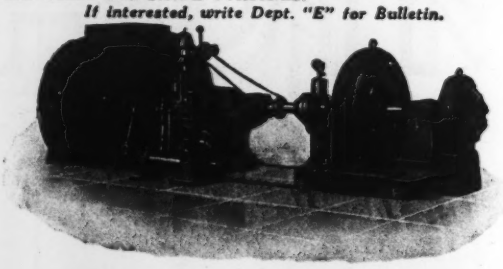
Birmingham, Ala.

District Offices in Principal Cities

TONS OF COAL CAN BE SAVED

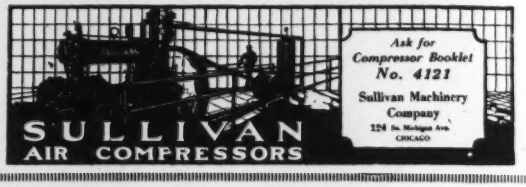
If water-power users would replace their antiquated and inefficient water wheels with SMITH TURBINES.

If interested, write Dept. "E" for Bulletin.



S. MORGAN SMITH COMPANY, YORK, PA.

Branch Offices: 176 Federal St. BOSTON; CHICAGO 76 Monroe St.; 405 Power Bldg. MONTREAL



GLAMORGAN PIPE & FOUNDRY CO.

LYNCHBURG, VA.

GENERAL FOUNDERS AND MACHINISTS

Manufacturers of

Cast Iron Pipe

For Water and Gas, Flange Pipe and Fittings

Western Office: 543 The Rookery, Chicago

453

UNIVERSAL CAST IRON PIPE

NO PACKING NO CALKING NO BELL HOLES
EVERY JOINT TIGHT

—water supply—fire protection—sewage disposal—etc.

THE CENTRAL FOUNDRY COMPANY

New York Chicago Birmingham Dallas San Francisco

U. S. PRODUCTS

CAST IRON PIPE

USICAST CASTINGS

United States Cast Iron Pipe & Fdy. Co.

General Offices: Burlington, N. J.

TRADE **"LEADITE"** MARK

Registered U. S. Patent Office

FOR JOINTING CAST IRON WATER MAINS

NO CAULKING

Saves 50% to 75%

Leadite Joints Improve with Age

THE LEADITE COMPANY, 1232 Land Title Bldg., Phila., Pa.

CRANE PIPE BENDS

Warren Foundry & Machine Company

Manufacturers of

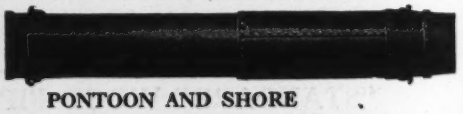
CAST IRON PIPE
SPECIAL CASTINGS

Bell and Spigot—Flanged—Flexible Joint—Culvert—Tubes, Milled and Plain Ends — Cylinders — Manhole Heads and Covers—High-Pressure Fire Service Pipe—All Sizes.

Works: Phillipsburg, N. J.

Sales Offices: Bowling Green Bldg., New York; 201 Devonshire Street, Boston, Mass.

Dredge Pipe



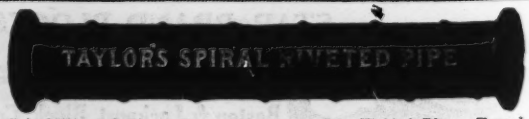
PONTOON AND SHORE

Elbows, Branches, Ball Joints, Valves, Steel Pontoons

MACHOLD & RIDDELL, Stephen Girard Building PHILADELPHIA, PA.

ROOT

Spiral Riveted Pipe—
Pipe Specialists for 48 years.
Abendroth & Root Mfg. Co.
Works: Newburgh, N. Y.
N. Y. Office: 233 Broadway



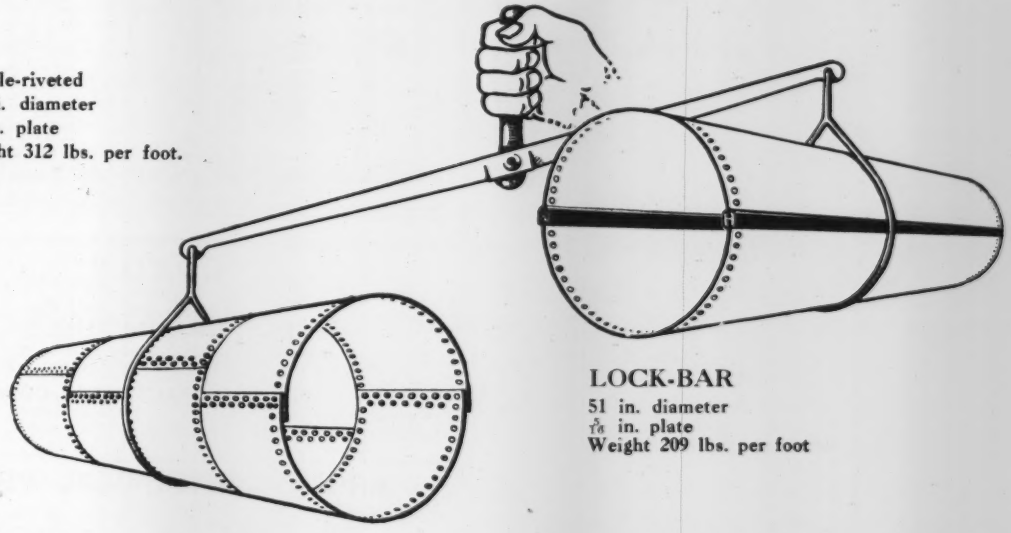
Spiral Riveted Pipe. Large Diameter. Lap Welded Pipe. Forged Steel Pipe Flanges. Flexible Ball Joints. Send for Catalog

AMERICAN SPIRAL PIPE WORKS

50 Church St., New York Main Office and Works; CHICAGO, Box 485

Both Have the Same Carrying Capacity—

Double-riveted
54 in. diameter
$\frac{7}{16}$ in. plate
Weight 312 lbs. per foot.



LOCK-BAR
51 in. diameter
$\frac{7}{16}$ in. plate
Weight 209 lbs. per foot

Yet Lock-Bar is 3 inches less diameter and 103 lbs. per foot lighter!

Which pipe for you? Lock-Bar Steel Pipe has greater carrying capacity because (1) its longitudinal joint is *as strong as the plate itself* and (2) because the absence of rivets, except at the circumferential joints, greatly reduces the frictional resistance.

It is made in diameters from 20 inches to 72 inches inclusive. With economies proportionate to the above in all diameters.

Upon request accompanied by business card we will be glad to send to Executives our new 200-page "Handbook of Pipe."

EAST JERSEY PIPE CO., 7 Dey St., New York City

LOCK-BAR

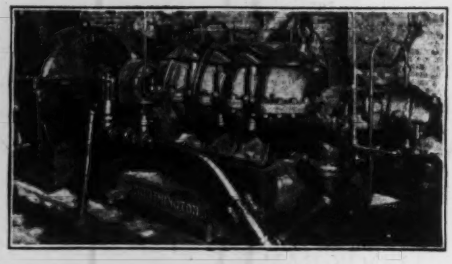
Before Closing

STRONG AS THE PLATE ITSELF

WORTHINGTON

CENTRIFUGAL PUMP TOPICS

No. 9



At Hell Gate

Here is just another of those modern power stations with Worthington centrifugal boiler feeders. The Hell Gate station of the United Electric Light and Power Co. has six 6-inch 4-stage Worthington centrifugal boiler feeders.

Hell Gate is one of the newest stations; others which have set the mark for modern equipment are:

Colfax Station—Duquesne Light & Power.
Conner's Creek Station—Detroit Edison.
Essex Station—Public Service, New Jersey.
San Diego Station—Consolidated Gas & Elec.
Edison Electric Illuminating Co., Boston.
Union Gas & Electric, Cincinnati.
Kansas City Power and Light Co.
United Illuminating Co., Bridgeport.
Calumet Station — Commonwealth Edison, Chicago.
Hartford Electric Light Co.
New Orleans Railway & Light Co.
Boston Elevated Railway Co.
Brooklyn Edison Co.

And they all have Worthington centrifugal boiler feed pumps.

WORTHINGTON PUMP AND MACHINERY CORPORATION

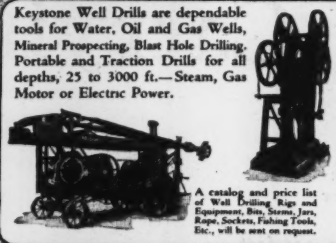
Executive Offices: 115 Broadway, New York City

Branch Offices in 24 Large Cities W 98.4

KEYSTONE WELL DRILLS

DOWNIE DEEP WELL PUMPS

Keystone Well Drills are dependable tools for Water, Oil and Gas Wells, Mineral Prospecting, Blast Hole Drilling. Portable and Traction Drills for all depths, 25 to 3000 ft.—Steam, Gas Motor or Electric Power.



A catalog and price list of Well Drilling Rigs and Equipment, Bits, Stems, Jars, Rope, Sockets, Fishing Tools, Etc., will be sent on request.

Downie Deep Well Pumps are offered for Heavy, Continuous Service in Deep Artesian Wells. They are built in Double and Single Stroke Models and may be Steam Driven, Belted, Direct Geared to Motor, or equipped for any other standard form of drive. Smaller Pumps for lighter service. Catalog No. 6 on request. Downie Centrifugals, single and multi-stage, Catalog 801.

Keystone Driller Company, Beaver Falls, Pa.

170 Broadway, New York Monadnock Block, Chicago Joplin, Mo.

EDSON

"Reg. U. S. Pat. Off."

The World's Standard for

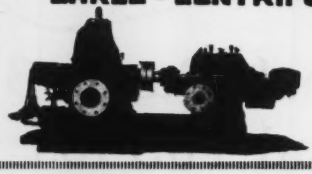
DIAPHRAGM PUMPS

Have your next requisition insist on our new DIAPHRAGM with the BEAD. Most efficient and durable Diaphragm made. None genuine without white diamond bearing our guarantee and name in full.

EDSON MANUFACTURING CORP'N

Established 1859 373 Broadway, Boston, Mass.

EARLE - CENTRIFUGAL - PUMPS



For all purposes where Centrifugal Pumps of the better class are adapted.

The Earle Gear & Mach. Co.
4707 Stenton Ave.
Philadelphia, Pa.

MORRIS Since 1864

CENTRIFUGAL PUMPS

Since 1864 we have been building Centrifugal Pumps, Hydraulic Dredges and Steam Engines.

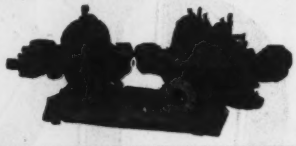
Morris Machine Works, Baldwinsville, N. Y.
Agents in Principal Cities.

RoTURBo CENTRIFUGAL

PUMPS

Manistee Iron Works Co., Manistee, Michigan

LEA-COURTENAY PUMPS



Centrifugal pumping machinery for every kind of pumping service.

Lea-Courtenay Co
3 Main Street Newark, N. J.

A. D. COOK, LAWRENCEBURG, INDIANA

Manufacturer of

Steam and Power Deep Well Pumps, Single and Double Acting, Cook's Patent Brass Tube Well Strainers, Deep Well Cylinders, Sucker Rods and Well Tools. Deep Well Pumping Systems installed complete.

Write for Catalog No. 11-6.

Cook Deep Well Products have always been manufactured by A. D. Cook. The Cook Well Company of St. Louis, Mo., a selling organization, has retired from active business and has transferred its good will to A. D. Cook. Customers of the Cook Well Company will receive direct service by writing to A. D. Cook, Lawrenceburg, Ind.

Coal and Material Handling Machinery

Works: Hudson, N. Y.
Branches: New York, Chicago, Boston, Buffalo.

Gifford-Wood Co.

2037-R

ROBINS CONVEYING MACHINERY
For every material handling need.
We design, manufacture and erect BELT CONVEYORS, BUCKET ELEVATORS, SKIP HOISTS, COAL AND COKE CRUSHERS, "PERFEX" SCREENS, COAL STOCKING AND RECLAIMING BRIDGES, and many other types of material handling equipment. *Write for Handbook of Conveyor Practice.*
ROBINS CONVEYING BELT COMPANY
New York, 14 Park Row — Chicago, Old Colony Bldg.
Boston, 70 Kilby St. — Pittsburgh, Union Arcade Bldg.
El Paso, Tex., 349 First National Bank Bldg.; Birmingham, Ala., C. H. Davis Engineering Co.; Toronto, Ontario, Gutta Percha & Rubber, Ltd.; San Francisco, The Griffin Company.

De Laval
Steam Turbine Co., Trenton, N. J.
Builders of TURBINE MACHINERY, including Steam Turbines of all capacities for high or low-pressure steam and for direct connection or for belt or rope drive. Complete Turbo-Generator Sets. Centrifugal Pumps for all Heads and Capacities. Centrifugal Blowers and air Compressors. Double Helical Speed Reducing Gears. *Write for special bulletins on apparatus in which you are interested.*

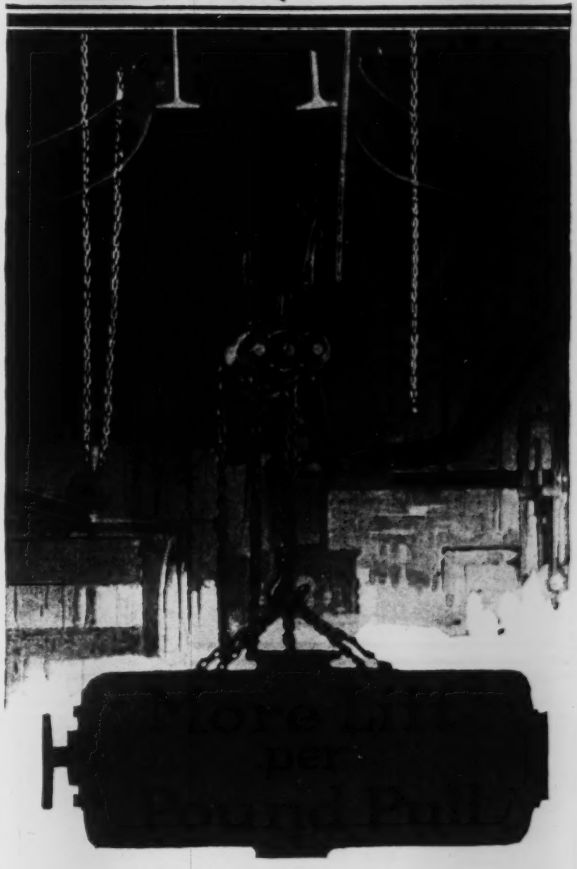
ALLIS-CHALMERS
MILWAUKEE, WIS. U. S. A.
Crushing and Cement Machinery—Hydraulic Turbines—Centrifugal Pumps—Power and Electrical Machinery—Pumping Engines—Air Compressors.

PELTON
HYDRAULIC TURBINES
(Impulse and Reaction)
GOVERNORS, AND CENTRIFUGAL PUMPS
THE PELTON WATER WHEEL CO.
Hydraulic Engineers
1992 Harrison St., San Francisco. — 100 Broadway, New York

WOODWARD WATERWHEEL GOVERNORS
Built in All Types and Sizes from the Smallest to the Largest
Woodward Governor Company
308 Mill Street — Rockford, Illinois

FAIRBANKS-MORSE
MANUFACTURERS **CHICAGO**
Oil Engines—Pumps—Electric Motors and Generators—Fairbanks Scales—Railway Appliances—Light Plants—Water Systems.

CYCLONE HOISTS
HIGH SPEED



IN ease and speed of hoisting, Cyclones are unexcelled. The gyrating yoke, an exclusive hoist development which keeps two-thirds of all lift gear teeth always in mesh, plus roller bearings throughout, means smoother action, a faster lift and less muscular energy expended on the hand chain.

A Cyclone Hoist traveling upon a C. M. Track-system makes material-handling easier and speedier all through the plant.

We have capable distributors in all localities to aid you in laying out material-handling and hoisting systems and submit estimates. Catalog on request. *Write.*

The Chisholm-Moore Mfg. Co.
Cleveland, O.
Hoists Cranes Trolleys
BRANCHES: NEW YORK : CHICAGO : PITTSBURGH

THE BABCOCK & WILCOX COMPANY

85 LIBERTY STREET, NEW YORK

Builders since 1868 of Water Tube Boilers of continuing reliability

BRANCH OFFICES

BOSTON, 49 Federal Street
PHILADELPHIA, North American Building
PITTSBURGH, Farmers Deposit Bank Building
CLEVELAND, Guardian Building
CHICAGO, Marquette Building
CINCINNATI, Traction Building
ATLANTA, Candler Building
TUCSON, ARIZ., 21 So. Stone Avenue
FORT WORTH, TEX., Flatiron Building
HONOLULU, H. T., Castle & Cooke Building

THE BABCOCK & WILCOX COMPANY — STEAM

WORKS

Bayonne, N. J.
Barberton, Ohio

Makers of Steam Superheaters since 1898 and of Chain Grate Stokers since 1893

BRANCH OFFICES

DETROIT, Ford Building
NEW ORLEANS, 521-5 Baronne Street
HOUSTON, TEXAS, Southern Pacific Building
DENVER, 435 Seventeenth Street
SALT LAKE CITY, 705-6 Kearns Building
SAN FRANCISCO, Sheldon Building
LOS ANGELES, 404-6 Central Building
SEATTLE, L. C. Smith Building
HAVANA, CUBA, Calle de Aguiar 104
SAN JUAN, PORTO RICO, Royal Bank Building

An Important Investment

A Caldwell Hemispherical Tank with Latticed Column Tower combines those essential elements of quality material and workmanship and scientific design demanded by careful, intelligent investors.

The massive, bountifully riveted tower and the accurately constructed tank successfully meet the demands of long, hard, exacting service.

Wood instead of steel tank if you prefer.

Send for Catalog

W. E. Caldwell Co.
Incorporated
1960 Brook St.
Louisville, Ky.

Caldwell TANKS AND TOWERS

RUST CHIMNEYS

RADIAL BRICK AND REINFORCED CONCRETE
REFRACTORY BRICKWORK

The RUST ENGINEERING CO.

ENGINEERS AND CONTRACTORS

PITTSBURGH WASHINGTON BIRMINGHAM

GENERAL CONCRETE CONSTRUCTION CO.

CONCRETE CHIMNEYS

CHICAGO
431 S. DEARBORN ST.

NEW YORK
30 CHURCH ST.

DES MOINES TANKS TRADE MARK

WORKS
PITTSBURGH
DES MOINES
CHATHAM, ONT.

DES MOINES TANKS

& Structural Steel Work

PITTSBURGH - DES MOINES STEEL COMPANY
CURRY BUILDING, PITTSBURGH, PA.

WIEDERHOLDT CHIMNEYS

for Special Service

Not equalled by any other for boiler or special service HIGH TEMPERATURE, ACID GASES OR ANY OTHER UNUSUAL CONDITIONS

Wiederholdt Construction Co.

621 Bank of Commerce Bldg. ST. LOUIS, MO.
30 Church St. NEW YORK, N. Y.

HORTON RAILROAD TANKS

Steel tanks are best.
The best are Horton's

CHICAGO BRIDGE & IRON WORKS

NEW YORK, 3111 Hudson Terminal. CHICAGO, 2101 Transportation Bldg. ATLANTA, 1025 Forsyth Bldg. DALLAS, 1602 Praetorian Bldg. SAN FRANCISCO, 1020 Rialto Bldg. MONTREAL, 1114 Bank of Toronto Bldg. JACKSONVILLE, FLA., 1322 Bisbee Bldg.

Steel Tanks for All Purposes

Also Water Softening Equipment

Storage Tanks, both vertical and horizontal, riveted or welded. Field and shop erected Storage Tanks; Elevated Tanks for industrial, municipal and railroad use.

GRAVER *Corporation*
East Chicago, Indiana

AMERICAN GAS FURNACE CO.

Main Office and Works, ELIZABETH, N.J.

EVERY TYPE OF GAS BLAST FURNACE, HEATING MACHINE, BURNER, INCLUDING BLOWERS, ETC., FOR INDUSTRIAL USE

FOSTER SUPERHEATERS

Reduce the fuel consumption of steam shovels. A necessity for maximum engine and turbine economy. Write for full information on the benefits of superheat.

POWER SPECIALTY COMPANY Boston Chicago Pittsburgh Kansas City San Francisco Dallas Philadelphia London, Eng. **111 Broadway, New York**

THE HEINE CHIMNEY CO.

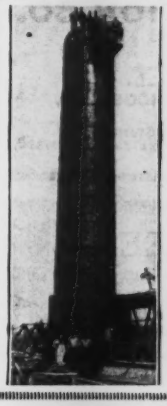
ENGINEERS and BUILDERS

RADIAL BRICK
and
CONCRETE CHIMNEYS

Chicago, Ill.
123 W. Madison St.

New York, N. Y.
30 Church St.

Branch offices in all principal cities



STEEL STACKS
··BREECHINGS··
TANKS OF ALL KINDS

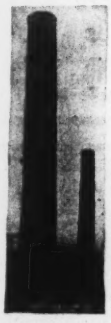
FABRICATORS AND ERECTORS
OF SPECIAL PLATE STEEL WORK

SEND US YOUR SPECIFICATIONS
OR BLUE PRINTS FOR QUOTATIONS

LITTLEFORD BROS.
415 E. PEARL ST.
CINCINNATI — OHIO

CUSTODIS CHIMNEYS

Alphons Custodis Chimney Construction Co.
95 Nassau Street, New York
Perforated Radial Brick Chimneys



BUILDERS AND DESIGNERS OF THE TALLEST AND LARGEST CHIMNEYS IN THE WORLD

Anaconda Copper Mining Company, Anaconda, Mont. Height 585 ft. above grade. Top diam., 60 ft.

We design and build chimneys of all sizes and for all purposes for boilers, furnaces, chemical plants, destructors, etc.

Experts in repairing chimneys.

Lightning Rods installed and repaired.

Specifications, plans, designs, and data furnished free upon request

ATLANTA CLEVELAND PITTSBURGH
BOSTON DETROIT RICHMOND
CHICAGO PHILADELPHIA SEATTLE
TORONTO MONTREAL

Send for free descriptive literature, Set No. 313.

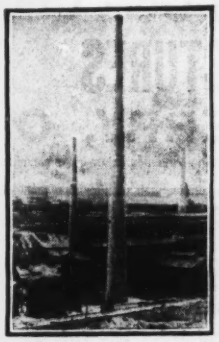
AMERICAN CHIMNEY CORPORATION
OF NEW YORK

Designers and Builders
Radial Brick Chimneys

MAY WE SEND YOU OUR CATALOGUE?

Main Office:
147 Fourth Avenue, New York

BRANCHES:
Chicago: 1101 Security Bldg.
Cleveland: 919 American Trust Bldg.
Philadelphia: Stephen Girard Bldg.
Boston, 141 Milk Street



SUMMERHAYS RADIAL BRICK CHIMNEYS
AND BOILER MASONRY

Put our 60 years of highly specialized training and experience to work on your chimney problems

Send for data-photographs and names of customers

WM. SUMMERHAYS & SONS
ROCHESTER, N.Y.

WEBER REINFORCED CONCRETE CHIMNEYS

More Than Fifteen Hundred in Use

Builders of
The Highest Masonry Structure in the World
at Tokio, Japan
Height 672 ft.
Inside top diameter 3 ft. 6 in.

Catalog sent free upon request.
Contracts executed in all parts of the world.

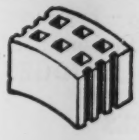
The Weber Chimney Company
1453 McCormick Building, Chicago, U. S. A.
Sales offices throughout the world

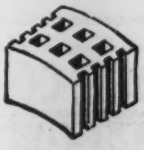
Norton Self-Lowering Jacks Are the Fastest Jacks Made

They lower the full load with absolute safety by pressing the button — you do not have to pump or crank them down as with other jacks.

25 to 100 tons capacity — Plain and with foot lift. Send for complete illustrated Catalog No. 30.

A. O. Norton, Incorporated
440 Brookline Ave., Boston, Mass.





Better specify— KELLOGG CHIMNEYS

That's the safest way out of future draft troubles. These splendid radial brick stacks are designed by experts to meet specified demands. Built of evenly burned brick having patented corrugated sides that add 62½ per cent. to the strength of the mortar joint. May we send you Bulletin No. 60.

The M. W. Kellogg Company
90 West Street - - New York
Chimneys and Welded Piping

MORAVA CONSTRUCTION CO.
ENGINEERS AND CONTRACTORS
Manufacturers of
STRUCTURAL STEEL
For All Purposes STEEL BUILDINGS, BRIDGES, Etc.
Capacity, 25,000 tons per year.
General Offices and Works: 85th Street and Stewart Ave.
City Office: Suite 419 People's Gas Bldg., 122 Michigan Boulevard, Chicago, Ill.

Lackawanna Bridge Works Corp.
Consulting Engineers. Designers. Manufacturers of Steel Structures
NEW YORK CHICAGO BUFFALO DETROIT BOSTON
Main Office and Works: Buffalo, N. Y.

STRUCTURAL STEEL
We are completely equipped for furnishing and erecting heavy rolling mill buildings, sheet and tin plate plants, machine shops, foundries, factories, crane runways, bridges and all manner of construction requiring highly fabricated steel work.
All varieties of steel plate work. Forge and hammer, oxy-acetylene or electric welding.
BLAW-KNOX CO., 601 Farmer's Bank Bldg., PITTSBURGH, PA.

FORT PITT BRIDGE WORKS
OF PITTSBURGH, PA.
Bridges, Buildings, Ship Fabrication
General Office, Oliver Bldg., Pittsburgh, Pa. New York Office, 29 Broadway.
Chicago Office, Ashland Block. Cleveland Office, Marshall Bldg.
Purchasing Dept. and Works, Canonsburg, Pa.

BRIDGE OPERATING MACHINERY
Designed and Manufactured for
All Types of Lift Bridges and Swing Draws
THE EARLE GEAR AND MACHINE CO.
PHILADELPHIA, PENNSYLVANIA

Minneapolis Steel & Machinery Co.
Designers, Fabricators, Erectors
Structural Steel—all purposes
Works in Minneapolis
Offices in Denver, Great Falls, New York, Salt Lake, Spokane

KING BRIDGE CO.
CLEVELAND, OHIO

WISCONSIN BRIDGE & IRON CO.,
NORTH MILWAUKEE WISCONSIN
Chicago Detroit Kansas City El Paso

The Mount Vernon Bridge Co.
ENGINEERS AND MANUFACTURERS OF
Iron and Steel Mill Buildings and Structural Work
Railway and Highway Bridges, Roofs, Viaducts, etc.
MOUNT VERNON, OHIO

RIVERSIDE BRIDGE CO.
STEEL STRUCTURES
MARTINS FERRY, O.

THE
Boston Bridge Works
INCORPORATED
47 Winter Street, Boston, Mass.
Bridges and Buildings

Works—Phoenixville, Pa.
The Phoenix Bridge Co.
—Bridges and Buildings—
Offices
Phila. New York Boston Rochester Washington

The Strauss Bascule Bridge Company—Engineers
Specialists in MOVABLE BRIDGES, Designers of
STRAUSS TRUNNION BASCULE BRIDGES
and
STRAUSS DIRECT LIFT BRIDGES
225 North Michigan Avenue, Chicago

VIRGINIA BRIDGE & IRON CO.
Steel Buildings & Bridges
ROANOKE MEMPHIS BIRMINGHAM ATLANTA
NEW ORLEANS DALLAS

MILWAUKEE BRIDGE CO
Engineers Contractors Manufacturers
STEEL FRAMED STRUCTURES OF ALL KINDS
MILWAUKEE, WISCONSIN.

BERLIN CONSTRUCTION CO.
STEEL BUILDINGS BRIDGES STRUCTURAL WORK
Offices and Works.
BERLIN - - CONN.
220 Broadway, New York
Springfield, Mass.

Shoemaker-Satterthwait Bridge Co.

Fabricated Steel for Bridges and Buildings

New York Main Office and Works Pottstown, Pa. **Philadelphia**

KENWOOD BRIDGE COMPANY

Roofs, Bridges Columns and Girders

Works Grand Crossing, Ill.

Engineers, Designers, Fabricators, Erectors of

STRUCTURAL STEEL WORK

Prompt shipments of fabricated or plain sections from stock

Steel Mill Buildings A Specialty

Offices 1416 First National Bank Bldg. Chicago, Ill. Tel. Randolph 1988

FREDERICK SNARE CORPORATION

Harbor Works
Bridges
Railroads
Railroad Terminals
Warehouses

Formerly The Snare & Triest Co.
CONTRACTING ENGINEERS
8 West 40th Street, New York
Havana, Cuba, Zulueta, 36 D. Philadelphia, Pa., 1524 Chestnut St.

Industrial Plants
Sugar Mills
Power Plants, Dams,
Reservoirs, Pipe Lines,
Tanks.

EASTERN BRIDGE & STRUCTURAL Co.
WORCESTER, MASS.
BRIDGES AND BUILDINGS

INDEPENDENT BRIDGE CO.

WORKS: NEVILLE ISLAND, PA. and NORTH SIDE
OFFICE: MAY BUILDING PITTSBURGH, PA.

Snead Architectural Iron Works
LOUISVILLE, KY.
STRUCTURAL STEEL and ORNAMENTAL IRON
Large Stock of Standard and Bethlehem Shapes
Immediate Shipment of Fabricated or Plain Material

TRIEST CONTRACTING CORP.
W. G. TRIEST, Pres. O. A. MECHLIN, Vice-Pres.
CONTRACTING ENGINEERS
126 East 59th Street, New York City
Steel, Masonry and Timber Construction

Edward F. Terry, Chairman of the Board
Frederick Tench, President.
George O. Wagner, Vice Pres. & Treas.
Howard B. Sherwin, Vice Pres. & Gen. Manager.

The TERRY & TENCH CO.
INC.
Engineers and Contractors
GRAND CENTRAL TERMINAL, NEW YORK CITY

STEELE & CONDICT, INC.
Manufacturing Engineers—Jersey City, N. J.
Most Modern Facilities for the
DESIGN, MANUFACTURE and ERECTION of
MACHINERY and EQUIPMENT for all types of MOVABLE BRIDGES
Established 1863

BEL-IRON

BELMONT IRON WORKS
PHILADELPHIA NEW YORK EDDYSTONE
Engineers · Contractors · Exporters
STRUCTURAL STEEL AND STEEL LUMBER
Complete Industrial Buildings

Established 1868 *Incorporated 1886* *Reincorporated 1905*
PENN BRIDGE COMPANY
Beaver Falls, Pa.
Designers Manufacturers Erectors
Bridges, Buildings, Structural Steel of Every Description
Stock Steel for Prompt Shipment
Foundry and Machine Work
Shops: Beaver Falls and Claysville, Pa. Capacity 30,000 tons per annum

CHESAPEAKE IRON WORKS
Steel Buildings Bridges, Etc.
Electric Traveling Cranes
BALTIMORE :: :: :: MARYLAND

Louisville Bridge & Iron Company
(Incorporated)
Louisville, Ky.
Bridges Buildings Structural Steel
Engineers, Fabricators, Erectors of Steel Railroad and Highway Bridges. Structural Metal Work of every description

You Get Them in the Gurley

There are a number of things which every Engineer looks for and expects to find in the transit he buys—

Accuracy—for his own reputation depends upon it.

Dependability—for his work can't wait while he has his transit "tinkered up."

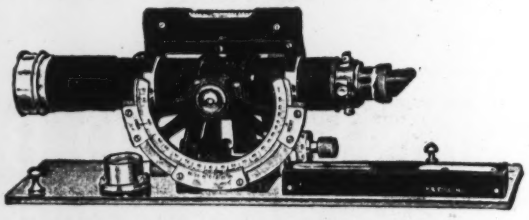
Durability—for he cannot consider frequent replacement.

Usability—for his work demands a simple, light weight "assistant", easy to carry and convenient to operate. That he gets these things in his Gurley Transit is evidenced by the fact that they have contributed towards the success of four generations of engineers.

We'll be glad to send descriptive literature

SINCE 1845
W. & L. E.
GURLEY
TROY, NEW YORK, U. S. A.

A New K&E Surveying Instrument



Owing to its compactness, lightness, and portability this Expedition Plane Table is particularly suitable for the geologist, topographer, or geographer.

The Alidade weighs but 3½ lbs. 7½ inch telescope; 11/16 inch objective; prismatic eyepiece; magnifying power about 16 diameters. The telescope can be revolved on its longitudinal axis. Vertical arc with K & E Patent Stadia Arc. Brass Alidade blade graduated, 50 parts to the inch. Circular spirit level, striding level, trough compass. In solid leather, velvet-lined case with shoulder strap. Drawing Board 18 x 24 in. of substantial construction mounted on light, but rigid, extension tripod with Johnson leveling attachment.

Send for complete price list

KEUFFEL & ESSER CO.

NEW YORK, 127 Fulton St. Gen'l Office & Factories, HOBOKEN, N. J.
CHICAGO ▲ ST. LOUIS ▲ SAN FRANCISCO ▲ MONTREAL
516-20 S. Dearborn St. 817 Locust St. 30-34 Second St. 5 Notre Dame St. W.

Drawing Materials ▲ Mathematical and Surveying Instruments
Measuring Tapes

Alteneder's Spring-Hinge Ruling Pen

Quickly and thoroughly cleaned without disturbing the adjustment

THEO. ALTENEDER & SONS
1219 Spring Garden Street, Philadelphia, Penna.

Pat. Aug. 9, '92; May 7, '95. Every genuine instrument stamped "T. A. & Sons."

ALTENEDER DRAWING INSTRUMENTS
MADE IN PHILADELPHIA SINCE 1850

Excel in every essential: Design—Material—Workmanship—Finish

Speaking of the famous
"WHITE" NO. 1916 TRANSIT

a well-known engineer recently said:

"It beats any machine I have ever used before; it lacks nothing but the power of speech."

Send for our 1922 Catalogs of surveying and drawing instruments.

David White Company
903-912 Chestnut St.
Milwaukee, Wis.

BUFF

Once a Buff Owner, Always a Buff Owner

Send for New Catalog No. 2

BUFF & BUFF MFG. CO., Boston, Mass.
Branches:
46 Dey St., N. Y. C., 231 N. Wells St., Chicago

Send for Catalog BX-10 of
PRECISION
ENGINEERING INSTRUMENTS
Wm. Ainsworth & Sons
THE PRECISION FACTORY
DENVER, COLORADO, U. S. A.

Tycos temperature instruments

Possess that unusual capacity for service that inspires confidence.

Taylor Instrument Companies Rochester, N. Y.
There's a Tycos or Taylor Temperature Instrument for Every Purpose

INDICATING RECORDING CONTROLLING

Quality Evidenced Since 1882

LIETZ

TRANSITS—LEVELS—ALIDADES
PRECISE—SENSITIVE—STRONG
The A. LIETZ CO., San Francisco, U. S. A.

Pease Steel Filing Cabinets are Indestructible, Rigid and Fireproof

They are built entirely of cold rolled furniture steel which has been re-annealed and pickled to remove all foreign matter and levelled to eliminate buckling. Welded corners do away with joints.

Manufactured in a beautiful olive green and all sections are of an exact size so that new sections can be added which will fit perfectly. Drawers operate easily—cabinet will not swell or shrink.

Our Drafting Room Furniture Catalog F-21 gives complete information on Tables, Filing Cabinets, Etc. Shall we send you a copy?

Pease Tables Do Not Wobble

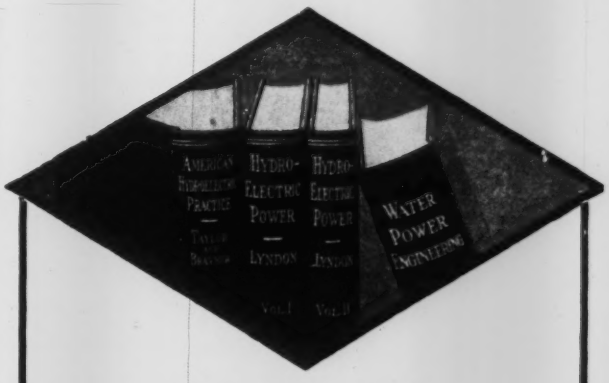
This illustration shows Pease No. 53 Table, which is a superior drawing table and is extremely rigid. The sturdy steel frame has a baked enamel surface.

A rack and pinion arrangement enables one person to easily raise or lower the adjustment.

Pease No. 53 Tables have been adopted in many large drafting rooms and a pleasing fact to us is the large number of orders we receive for the second and third tables from the same parties. Fully illustrated in our Furniture Catalog F-21.

Write for Catalog F-21

THE C. F. PEASE COMPANY
836 N. Franklin St., Chicago, Ill.
Blue Printing Machinery—Drafting Room Supplies



Examine this Hydro-Electric Library for 10 days, free

IF your consulting work has taken you into the field of water power development you know the work done by Lyndon—Taylor—Braymer—Mead. All have a world-wide reputation.

The McGRAW-HILL HYDRO-ELECTRIC LIBRARY contains what they, from their experience, have found to be essential in undertaking a hydro-electric project. Every angle of the field is covered fully—the benefit of their years of engineering experience is *yours*.

Lyndon—
Hydro-Electric Power

Volume One—Hydraulic Development and Equipment
498 pages, 6 x 9, 235 illustrations.

Volume Two—Electrical Equipment and Transmission
360 pages, 6 x 9, 194 illustrations.

These two books cover design and construction thoroughly. Every part of a hydro-electric plant that the practicing engineer is expected to design can be designed from the information in these two volumes. Dams, pipe lines and transmission lines receive special attention. Electric machinery is treated from the viewpoint of the man who selects it.

Taylor and Braymer—
American Hydro-Electric Practice
439 pages, 6 x 9, 285 illustrations.

This book gives detailed descriptions of many typical American plants, with definite examples of the best American practice included.
The information presented is exceptionally valuable as a guide in formulating, arranging and comparing plans and specifications, and checking operating results.

Mead—
Water Power Engineering
843 pages, 6 x 9, 437 illustrations.

An explanation of the details of the entire engineering problem from the first investigation to the complete plant. The material on Financial and Commercial Considerations is of special value.

Our Special Offer

We are so firmly convinced that you will find this library of value to you that we will send the books without one cent down at your request. Examine them for 10 days, free. If you decide to keep them send us $4 in ten days and then $4 monthly for four months.

SMALL MONTHLY PAYMENTS

Free Examination Coupon

McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York, N. Y.
You may send me the four volumes of the McGraw-Hill Hydro-Electric Library on approval for 10 days' examination. I agree to return the books, postpaid, in 10 days or to remit $4 then, and $4 per month for four months.

.....I am a member of Am. Soc. C. E.

.....I am a subscriber to Eng. News-Record.

Signed .....

Address .....

Official Position.....

Name of Company.....

Books sent on approval to retail purchasers in the U. S. and Canada only.

N.R. 6-29-22

Hamilton Drafting Room Furniture

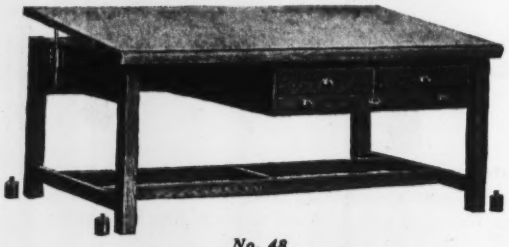
The Vertical plan safe fits in with the Hamilton Idea, which is to simplify the work in the drafting room and to increase the efficiency of the draftsmen.

Hamilton engineers will be glad to tell you how this can be done at minimum cost of installation.

Hamilton Manufacturing Co.
Two Rivers, Wisconsin
Rahway, New Jersey

The Hamilton Line Includes

Combination Drawing Tables and Filing Cabinets—Steel and Wood Sectional Blueprint Files — Drawing Tables — Folding Horses and Trestles—Typewriter Tables—Straight Egdes—T Squares.



No. 48
Table with Adjustable Top.

WEBER Waterproof Drawing Ink

Easier on the Eyes

The opaqueness of this ink and the satin finish with which it drys, make it a favorite among draftsmen.

At all dealers

F. WEBER CO.
Drawing Materials
PHILADELPHIA
St. Louis, Mo. Baltimore, Md.

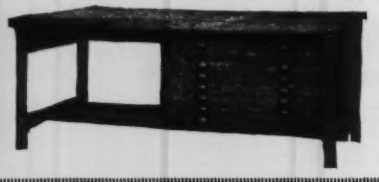
DIETZGEN DRAWING INKS

are absolutely waterproof, flow freely, dry quickly, and stand color washes. Colors dense, true and brilliant.

Drawing Tables, Boards, Scales, T Squares, Triangles, Curves, Instruments, etc.

The quality will appeal and prices will interest.

EUGENE DIETZGEN CO.
Chicago New York San Francisco New Orleans Pittsburgh Philadelphia Washington



REGISTERED ECONOMY U. S. PAT. OFFICE

WOOD or STEEL
ECONOMY DRAWING TABLE & MFG. COMPANY
Adrian, Mich.

BERGER
Monitor Transits and Levels

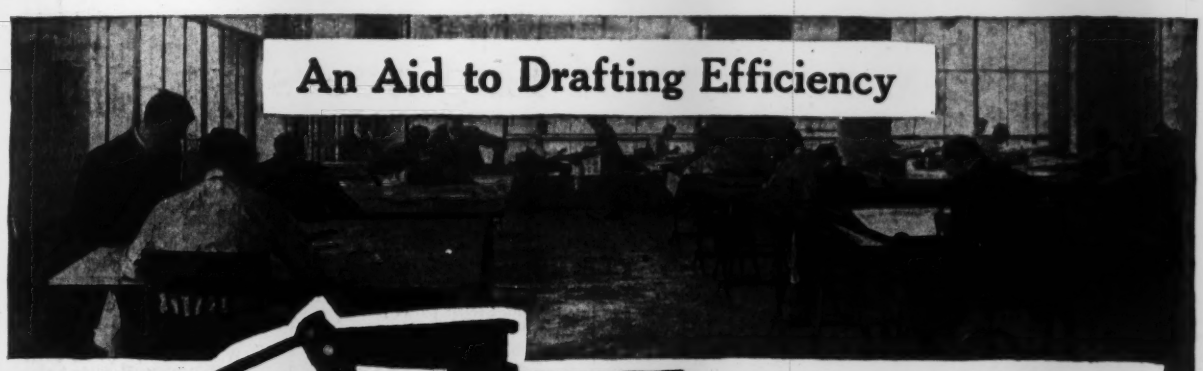
C. L. BERGER & SONS
BOSTON, MASS., U. S. A.

LUFKIN

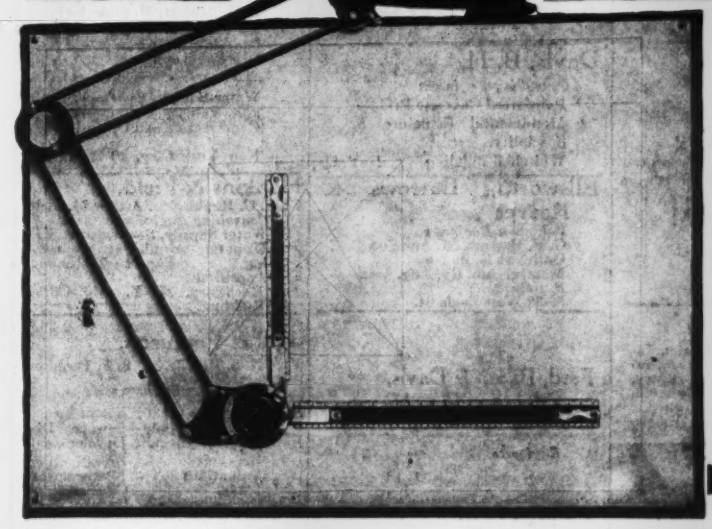
***Measuring Tapes* Stand on a Record of Performance as well as a Guarantee**

They have *Instantaneous* Readings
Nubian (dark) Finish, Metal-Lined Cases, Improved Reels, Etc.
Stocked by Hardware and Engineering Supply Houses.

THE LUFKIN RULE CO. *SAGINAW, MICHIGAN* New York Office and Warehouse 106-110 Lafayette Street
Send for Catalogue Canadian Factory Windsor, Ont.



An Aid to Drafting Efficiency



Drafting Room of the Dayton Engineering Laboratories Co.

Save Time with the UNIVERSAL Drafting Machine

Leading concerns all over the world are saving from 25 to 50 per cent of the time ordinarily required to make drawings. The Universal Drafting Machine makes drafting easier, more accurate and interesting. It is adapted to all forms of drafting. Simple, durable and easy to handle. It is not expensive.

Get our illustrated Catalog for further information

Universal Drafting Machine Co.
Cleveland, Ohio

Faster, cleaner work—at lower cost

The operator gets out faster, cleaner work than he ever did before—and the prints are perfect! Every detail clean, sharp. Use it to do your copying work—estimates, specifications, etc., it is so economical to operate. There are no glass cylinders to break—no ventilating fans to get out of order or fail to function—no series of belts to adjust or monkey with—no high power motor to eat up current. One of the biggest advantages of Wickes Machines is their absolute simplicity. Write us today for details of the "how and why" of these advantages.

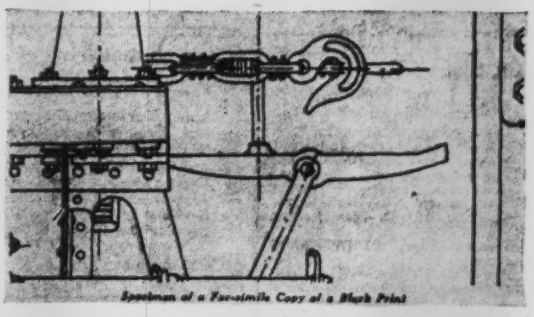
Request brings printed matter.

1856 **WICKES BROTHERS** 1922

2007 Water St., Saginaw, Mich., U. S. A.
501 Fifth Ave., New York, N. Y.
736 White-Henry Bldg., Seattle, Wash.

WICKES BLUE PRINT SYSTEM
SAGINAW-MICHIGAN

"SEE-B" Process on Tracing Cloth



Specimen of a Fac-simile Copy of a Black Print

Duplicates Original Tracings on Waterproof-Tracing Cloth

The newest process in printing. Exact duplicates in 15 minutes on tracing cloth by contact printing similar to blue printing. Duplicates serve every purpose of original. Positively waterproof. Great economy in time and money.

Upon request, accompanied by business card, we will be glad to send executives a copy of our new 384-page catalog, illustrated in colors.

New York Blue Print Paper Co.
102 Reade St., New York

American Blue Print Paper Co.
445 Plymouth Court, Chicago

Directory of Engineers

New England

Adams, H. S.
Consulting Engineer
Wharf and Dock Construction, Foundations, Harbor Works, Water Terminals.
100-101 Ames Bldg.,
Boston (9) Mass.

Barbour, F. A.,
M.Am.Soc C.E. M.Can.Soc.C.E.
Consulting Engineer.
Water Supply, Water Purification, Sewerage and Sewage Disposal.
Boston, Mass., Tremont Bldg.

L. J. Carmalt
Consulting Engineer
Industrial site investigations in New England their Transportation, Labor and Economic Problems. General Engineering Studies—Railways, Terminals, etc.
129 Church St., New Haven Conn

The Crandall Engineering Co.
Floating, Basin, and Railway Dry Docks
Wharves, Piers, Terminals Harbor Works
Investigation, Reports, Plans Supervision
Boston, Mass., 102 Border St. East Boston Sta.

Main, Charles T.,
M.Am.Soc.M.E.
Plans and Specifications for Textile Mills and other Industrial Plants, Water Power and Steam Power Development. Examinations and Reports on Plants with reference to their Value, Reorganization or Development.
Boston, Mass., 201 Devonshire Street.

McClure-Greene Eng. Co.
Civil and Consulting Engineers
Water Works, Sewage Disposal, Dams, Bridges, Hydraulic Developments, Examinations, Estimates, Reports, Plans, Specifications, Supervision.
Worcester, Mass., Park Bldg.

Metcalf & Eddy,
Water Works Sewerage. Disposal of Sewage and Industrial Wastes. Supervision of Operations. Valuations.
Boston, Mass. 14 Beacon St.

Vaughan Engineers
John F. Vaughan
Design and Supervisiou Hydraulic, and Electrical Steams, and Structural Industrials & Public Utilities Investigations and Reports.
Boston, Mass. 185 Devonhie Str.

Stone & Webster
Incorporated
Examinations Reports Valuations
on
Industrial And Public Service Properties
New York Boston Chicago

New York City New York and New Jersey

Banks & Craig
Engineers—Chemists
Design, Operation, Valuation, Investigations. Water, Sewage, Industrial Wastes. Food Chemistry, Dehydration, Colloids, Research.
51 East 42nd St., New York
709 Telegraph Building, Harrisburg, Pa.

Bowe, Thomas F.
Consulting Engineer
Reports Waterworks, Sewerage,
Valuation Treatment of
Design Sewage,
Operation Industrial Plants.
110 Williams St.
New York City.

City-Wastes Disposal Co.
Specialists iu Drainage, Sewerage and Sewage Disposal. Reports and Estimates, Surveys, Plans and Supervision.
New York, 45 Seventh Avenue

Caird, James M.
Chemist and Bacteriologist.
Expert Testimony; Examinations and Reports upon Proposed Sources of Water Supplies; Tests and Supervision of Filter Plants; Copper Sulphate Treatments for Algae; Sterilization Treatments; Sanitary Investigations, Including Typhoid Fever.
92 Fourth St., Troy, N. Y.

Cole, Edward S.
Hydraulic Engineer.
50 Church St., New York.

Concrete-Steel Engineering Co.
Designing and Supervising Engineers
Concrete-Steel Bridges
New York, Park Row Bldg.

Coulter, Waldo S.
Consulting Engineer
Water, Sewerage, Industrial Wastes, Drainage, Power Valuations, Reports, Estimates, Surveys, Plans and Supervision.
114 Liberty St., New York City

Cooper & Co., Hugh L.,
General Hydraulic Engineering.
Including the design, financing construction and management of hydro-electric power plants.
New York City, 101 Park Ave.

Davis, B. H.
Consulting Engineers
Reinforced Concrete Bridges Monumental Structures a Speciality.
Whitehall Building N. Y. C.

Ellsworth, Barrows & Reeves
Valuation Engineers
G. E. Barrows M. Am. Soc. C. E.
Cuthbert E. Reeves
Member Am. Ry. Eng. Assn.
Buffalo, N. Y.
50-52 West Eagle St.

Ford, Bacon & Davis, Incorporated
Engineers.
New York, 115 Broadway.

Fowler, Charles Evan,
M.Am. Soc. C.E., M. Can. Soc. C.E.
Consulting Civil Engineer.
Bridges, Foundations, Dredges, Dredging, River and Harbor Improvement.
25 Church Street, Dime Bank Bldg
New York City. Detroit

Roger M. Freeman
Construction Engineer
Design and Construction of Industrial Buildings, Steel Plants, Hydro-Electric Developments.
8 West 40th St. New York City
Tel. Murray Hill 0170.

Fuertes, James H.,
M.Am.Soc.C.E.
Civil and Sanitary Engineer.
Water Supply and Water Purification, Sewerage and Sewage Disposal.
New York, 140 Nassau St.

Fuller & McClintock
Engineers
Geo. W. Fuller
James R. McClintock
Jesse K. Giesey
Elmer G. Manahan
James C. Harding
Wellington Donaldson
Fred G. Cunningham
Harvey P. Jones
Lawrence G. Rice
170 Broadway, New York City.
Summit-Cherry Bldg., Toledo, O.
Produce Exchange Bldg., Kansas City, Mo.

Gilmore, Thomas N.
Consulting Engineer—
M. Am. S. C. E., M. Am. S. M. E.
Railroad Shops, Locomotive Terminals, Power Plants, Steam Stations, Industrial Plants.
136 Liberty St. New York, N. Y.

Hazen, Whipple & Fuller,
Allen Hazen, G. C. Whipple,
W. E. Fuller, C. M. Everett,
L. N. Babbitt, H. Malcolm Pirnie
Consulting, Hydraulic and Sanitary Engineers.
Water Supply, Sewerage, Drainage, Valuations, Supervision of Construction and Operation.
New York City, 30 E 42nd St

Hopkins & Field,
Chas. C. Hopkins Arthur M. Field
Consulting Engineers.
Water Supply, Sewerage, Wastes Disposal, Municipal Engineering. Expert Testimony. Appraisals.
Rochester, N. Y., 349 Cutler Building.

Hill & Ferguson,
N. S. Hill, Jr. S. F. Ferguson
Consulting Engineers.
Water Supply—Sewage Disposal—Hydraulic Development.
Reports Investigations
Valuations Management
Design Construction
Operation Rates
Chemical and Biological Laboratories
112 East 19th St., New York City.

Horton, Robert E.
Mem. Inst. C.E. Mem. Am. Soc. C.E.
Consulting Hydraulic Engineer
Reports, Estimates, Design and Construction for Water Power, Water Supply, Storage, Flood Control, Irrigation and Drainage.
Specialist in Hydraulic and Hydrologic Problems, Rainfall, Evaporation, Stream Yield and Ground Water. Water Power Valuation.
27 Douw Bldg. Laboratory,
Albany, N. Y. Voorheesville, N.Y

George A. Johnson Co.,
Engineers
Civil—Electrical—Mechanical
G. A. Johnson N. B. Wolfe
H. C. Stevens C. R. Wyckoff
G. L. Watson (Associate)
Water Supply, Sewerage, Refuse Disposal, Power Development, Industrial Plants, Public Utilities, Bridges, Tunnels and Harbors.
Reports, Designs, Supervision of Construction, Management.
150 Nassau St., New York City

Herbert C. Keith
M. Am. Soc. C. E.
Civil and Consulting Engineer
Design and Construction of Bridge and Structural Work. Masonry and Foundations Railroads and Street Railways.
Inspection and Valuation of Existing Structures.
Legal Engineering.
13 Park Row, New York City

Directory of Engineers

Walter Kidde & Company
Incorporated

Engineers and Constructors

Inspections — Industrial Plants
Reports — Wharfs and Piers
Design — Power Plants
Construction — Chemical Works

New York City, 140 Cedar Street

Landreth, Olin H.,
Consulting Engineer.
Hydraulic and Sanitary Engineering. Consultation, Investigation, Valuation.
New York, No. 156 Fifth Ave

William S. Lee
M.Am.Soc.C.E. M. Am;Soc.M.E. M. Eng. Inst. Can.
Fellow Am. Inst. E. E.
Chief Eng Southern Power Co.
Consult ng Engineer
511 Fifth Ave. New York City.
Charlotte, North Carolina.

McClellan & Junkersfeld
Incorporated
Engineering and Construction
New York Philadelphia
45 William St. 112 South 16th St.

Mead, Daniel W.,
Scheidenhelm, F. W.,
Consulting Engineers.
Hydro-electric Developments, Water Supply, Irrigation, Drainage, Flood Control.
30 Church St. New York

Meyer, Strong & Jones, Inc.
Power Plants—Mechanical and Electrical Equipment—Heating and Ventilating.
101 Park Ave., New York City

Mueser, William
Consulting Engineer
Concrete-Steel Bridges
Concrete-Steel Standpipes
New York, Park Row Bldg.

North, Allison & Ettlinger
Consulting Engineers—
City Surveyors Topographic Surveys of large tracts.
City Planning, Field Supervision Dock, Terminal Development.
Staten Island, New York, Crabtree Bldg.

Potter, Alexander,
Consulting Engineer.
Hydraulics, Sanitation, Concrete Structures. Tel. 5501 Cortlandt.
New York, 50 Church Street.

Potts, Clyde
M. Am. Soc. C. E.
Consulting Sanitary Engineer
Sewerage and Sewage Disposal
Water Works and Water Supply
Reports, Plans and Estimates
30 Church St., New York.

Robinson, Geo. L.,
Consulting Engineer.
Sewers, Sewage Disposal, Water Supply.
5621 Grand Central Terminal
New York.

Dwight P. Robinson & Company, Inc.
Engineers and Constructors
With which is consolidated
Westinghouse, Church, Kerr & Co., Inc.
Industrial Plants, Power Developments.
Railroad Shops and Terminals.
125 East 46th St., New York.
Chicago, Youngstown, Los Angeles, Montreal, Dallas.

Sanderson & Porter,
Engineers.
New York, 52 William Street,
Chicago, 72 West Adams Street;
14 Montgomery St. San Francisco

Steinman, Dr. D. B.
M.Am.Soc.C. E, Am. Ry. Eng. A.
Consulting and Designing Engineer
Bridges and other Structures, Engineering Projects, Design, Supervision, Investigations, Reports, Valuations, Advisory Service.
New York 25 Church St.

Vermeule, Cornelius C.
Consulting and Designing Engineer
Water Supply, Sewerage.
Water & Steam Power Plants.
Reports, Valuations.
38 Park Row New York

Waddell, Dr. J. A. L.
Consulting Engineer
Steel and Reinforced Concrete Structures, Waddell's Vertical Lift Bridge. Difficult Foundations. Reports, Checking of Designs, Advisory Services, and Appraisals.
35 Nassau Street, New York.

The J. G. White Engineering Corporation
Engineers—Constructors
Industrial Plants, Buildings Steam Power Plants, Water Powers, Gas Plants, Steam and Electric Railroads, Transmission Systems.
43 Exchange Place New York

Wallace & Co., Joseph H.,
Consulting Industrial Engineers.
Industrial and Power Plants.
Hydraulic Developments — Investigations — Consultation — Reports.
New York City, Toronto.

Ohio and Pennsylvania

Albright & Mebus,
Civil and Sanitary Engineers.
Sewerage, Sewage Disposal, Town Planning.
Philadelphia, Pa., 908 Land Title Building.

Bean, George L.
Consulting Engineer.
Water Works, Hydraulics and General Municipal Engineering.
706 Abbott Building, Philadelphia, Pa.

Chester Engrs., The J. N.
J. N. Chester — D. E. Davis
J. F. LaBoon — J. T. Campbell
E. E. Bankson
Consulting Hydraulic, Sanitary and Valuation Engineers.
Pittsburgh, Pa., Union Bank Bldg

Clark, Wm. G.
Civil and Sanitary Engineer.
Hydraulic, Sanitary and Municipal Engineering, Power Developments, Expert Examinations and Reports.
1046 Spitzer Bldg., Toledo, O.

Day & Zimmermann, Inc.
Engineers.
Industrial Plants, Power Plants, Sub-Stations, Transmission Lines, Examinations and Reports, Valuations, Management of Public Utilities.
611 Chestnut St., Philadelphia,
New York City Chicago.

Easby, William, Jr.
M. Am. Soc.C.E.
Civil and Sanitary Engineer.
Sewerage.
Sewage Disposal.
Water Supply.
Water Purification.
Water Power.
Pavements and Highways.
Investigations, Designs, Supervision of Construction Operation and Valuation.
Philadelphia, Pa., 1302-3 Commonwealth Building, 1201 Chestnut St.

Fayette Engineering Co.,
Civil, Mining and Consulting Engineer
L. C. Mechling, E. L. Zearley.
Coal, Coke Plants.
Uniontown, Pa.

Fogg, Ralph J. M. A. Soc. C. E.
Civil and Consulting Engineer
Investigations & Reports
Steel & Concrete Structures
Design, Inspection, Valuation
Inspection of Steel & Cement at mills. Testing of Materials.
Bethlehem, Pa.

Franklin & Company
Consulting Engineers
Water Supply-Sewage Disposal
Town Planning.
Report-Valuation-Design.
Philadelphia, 906-7 Crozer Bldg.

Gannett, Seelye & Fleming
Engineers
Reports - Valuations - Design, Management - Municipalities, Utilities - Industrials.
Erie, Pa. - Harrisburg, Pa.
Memphis, Tenn.

New Cards, Changes of Copy, Corrections or Cancellations
Effective with the first issue of onth following receipt.

George B. Gascoigne
Consulting Sanitary Engineer
Sewerage and Sewage Disposal
Water Supply and Purification
Treatment of Industrial Wastes.
Leader-News Building Cleveland

Harrison Mertz & Emlen Inc.,
Engineering & Consultion
Sewage Disposal, Water Supply, Landscape Contracting.
Franklin Bank Building,
Philadelphia, Pa.

Ledoux, J. W.
Consulting Engineer
Water Works, Water Power, Power Plants, Reports, Designs, Construction Supervision, Valuation, Arbitration, Rate Schedules.
112 North Broad St., Phila, Pa.

Levinson, H. J.
Consulting Engineer
Power Plants, Industrial Plants, Mechanical Refrigeration, Ice Plants, Construction, Installing, Supervision, Inspection, Tests, Reports.
Phila., Pa., 4929 N. Warnock St.

Moore, W. E. & Co.,
Engineers
Reports, Designs and Supervision of Public Service Properties.
Industrial Plant Installations
Electric Furnace Design and Applications.
Pittsburgh, Pa., Union Bank Bldg.

Scofield Engineering Co.,
Consulting, Designing, Supervising Engineers.
Philadelphia Pennsylvania

Swigart & Ehrman
S. G. Swigart, M.Am. Soc. C. E.
G. L. Ehrman.
Civil and Hydraulic Engineers
1119-20 Second National Bldg.
Akron, Ohio.

Watson Engineering Company, The
Designing and Construction Engineers.
Industrial and Power Plant and Equipment, Bridges and Railway Buildings, Docks, Terminals and Marine Structures.
Warehouses and Commercial Buildings.
Engineering Reports.
4614 Prospect Ave., Cleveland

Wilkins Company, The W.G.
Engineers and Architects.
Railroads, Buildings, Manufacturing Plants, Coal and Coke Plants, Water Works and Sewerage. Examinations and Reports.
Pittsburgh, Pa. Westinghouse Building

Directory of Engineers

Chicago and Illinois

Alvord, Burdick & Howson

John W. Alvord—Charles B. Burdick—Louis R. Howson

Engineers for

Water Works.
Water Purification.
Flood Relief.
Sewerage.
Sewage Disposal.
Drainage.
Appraisals.
Power Generation.

Chicago Hartford Bldg.

The Arnold Company

Engineers—Constructors

Power Plants
Industrial Plants
Locomotive Terminals
Maintenance Shops
Designed in Entire Detail
Erected Complete, Including
Preliminary Operation.

105 So. La Salle Street, Chicago.

Byllesby Engineering & Management Corp.

208 S. La Salle Street, Chicago

New York Tacoma

Condron Company

Theodore L. Condron, M. Am. Soc. C. E.
Chester L. Post, M. Soc. C. E.
Consulting Engineers
Bridges, Buildings, Foundations
Monadnock Building, Chicago.

J. L. Jacobs & Company

Engineers and Cost Accountants

Investigations, Reports, Appraisals, Organization and Management, Cost Accounting Systems, Employment and Wage-Plans.
Monadnock Building, Chicago

Kelker, De Leuw & Co.

Municipal and Sanitary Engineers

Chicago. Conway Building.

Krauel, H. B.

Design and Construct

Buildings
Bridges
Industrial Plants
Danville, Ill.

Randolph-Perkins Co.

Engineers-Managers

Successors to:

Isham Randolph & Co.
Edmund T. Perkins Eng'g Co.
George B. Massey Co.

Land Drainage, Levees and Pumping Plants, Flood Protection, Water Supply, Sewage Disposal, Excavation Specialists
Stripping Properties Prospected.

1210 First National Bank Bldg.
Chicago.

Maury, Dabney H.,

Consulting Engineer

Water Works, Sewerage, Power Plants, Appraisals.

Chicago, Ill 1445 Monadnock Bldg.

Stern, I. F.

Consulting Engineer

Bridges, Buildings and other Structures. Engineering Projects. Design, Supervision, Investigation, Reports, Valuations, Advisory Service.
Chicago, Ill., First Natl. Bk. Bldg

Central West

American Appraisal Company, The

Authoritative Reports and Valuations Covering Public Utility, Municipal, Mineral, Industrial, Commercial and Residence Properties.

Milwaukee New York

Black & Veatch

Consulting Engineers.

Sewerage, Sewage Disposal, Water Supply, Water Purification, Electric Lighting, Power Plants, Valuations, Special Investigations and Reports.

E. B. Black N. T. Veatch, Jr.
A. P. Learned I. S. Siegrist
E. H. Dunmire J. F. Brown
C. A. Haskins

Kansas City, Mo., Mutual Building.

Burns & McDonnell,

S. Burns. R. E. McDonnell.
Consulting Engineers.
Appraisals, Rate Investigations, Expert Testimony, Water Works, Sewerage, Lighting.
Kansas City, Mo., Suite 400 Inter-State Bldg.

Fargo Engineering Co

Consulting Engineers

Hydro-Electric and Steam Plants
Difficult Dam Foundations.

Jackson, Michigan

Federal Engineering Co.,

Civil and Architectural Engineers.

Designers and Superintendents Buildings and Industrial Plants.
Milwaukee, Wis., 218 - 219 Stephenson Building.

Harrington, Howard and Ash

Consulting Engineers. Bridges and other structures of steel and reinforced concrete. Advisory services in municipal problems. Appraisals. Kansas City, Mo.
1012 Baltimore Avenue.

Hubbell, Clarence W.,

M. Am. Soc. C. E.
Consulting Engineer.
Sewerage, Sewage Disposal, Water Supply and Municipal Engineering.
Detroit, Mich., 2348 Penobscot Building.

Luten, Daniel B.,

Designing and Consulting Engineer.

Reinforced Concrete Bridges exclusively.
Associate Engineers in each state
Indianapolis, Ind.

Meyer, Adolph F.

Consulting Hydraulic Engineer

Member. Am. Soc. C. E.

Member Am. Soc. M. E.

Minneapolis, 628 Met. Bk. Bldg

Mullergren, Arthur L.

Consulting Engineer
Waterworks, Light and Power Plants, Gas Plants, Ice Plants, Street Lighting Designs, Reports, Appraisals, Management.
555 Gates Bldg. Kansas City, Mo.
1705 Equitable Trust Bldg. N. Y.

Shenehon, Francis C.

Hydraulic Engineer
M. Am. Inst. Cons. Engrs.
M. Am. Soc. C. E.
Water Power, Flood Relief, Drainage, River Diversions, Counsel Engineering Litigation.
Minneapolis, 628 Met. Bk. Bldg.

Smith & Co., C. E.

Consulting Engineers
Appraisals, Expert Testimony, Bridges, Electrification, Foundations, Highways, Docks, Water Supply, Flood Protection.
2065 Railway Exch., St. Louis
Chicago, Kansas City.

Spooner & Merrill

Chas. W. Spooner, R. H. Merrill,
Consulting Engineers.
Reports; Appraisals; Counsel Engineering Litigation, Power Plant Design, Flood Relief.
Powers Theater Building,
Grand Rapids, Mich.

Turner, C. A. P.,

Consulting Engineer.
M. Am. Soc. C. E., Reinforced Concrete and Structural Steel Bridges, Buildings and Manufacturing Plants.
Minneapolis, Minn., 627 First Ave. N.

Williams, Gardner S.,

M. Am. Inst. Cons. Engr.
M. Am. Soc. C. E.
Consulting Engineer.
Hydraulic Investigations, Water Power Developments, Water Supply Systems, Reports, Appraisals. Ann Arbor, Michigan.

Southern States

Howard D. Bennett

Consulting and Contracting Eng'r.
Dredges of all types Designed and Built for every service Municipal Fire, Ice and Ferry Boats, Harbor and Terminal Development. Plans, Specifications, Reports, Etc
2114 Allendale St. Baltimore, Md

Black, McKenney & Stewart

Engineers
W. M. Black,
Maj. Gen. U. S. A. Retired.
Charles A. McKenney.
John Stewart.
River and Harbor—
Port and Terminal Work.
Hydro-Electric Development
Municipal and
Highway Engineering
Consulting — Organization — Administration
618 Seventeenth St., N. W.
Washington, D. C.

Billingsley, James W.,

Preliminary Investigations, Detailed Plans, and Construction Supervision. For Industrial Developments, Docks, Roads, Bridges, Drainage and Municipal Improvements.
New Orleans, Louisiana.

Greiner & Company, J. E.

Consulting Engineers
Design, Construction, Investigation. Advisory Services—Bridges, Docks, Piers, Warehouses and other Engineering Structures.
Pittsburgh, Pa. 403 Fulton Bldg.
Baltimore, Md. Fidelity Bldg.

Morgan Engneering Companies, The,

Hydraulic Engineers.
Flood Prevention — Irrigation—Drainage—Power Development.
Memphis, Dayton

Robert L. Totten

Mem. Am. Soc. C. E.
Consulting Engineer
Valuations & Reports, Railroads & Highways, Mining Investigations, Municipal Improvements.
Jefferson County Bank Bldg
Birmingham, Ala

Weller, Francis R.

M. Am. Inst. E. E., M. Am. Soc. C. E.
Consulting Engineer
Hydro-Electric and Steam Power Plants, Reports, Appraisals, Designs, Construction; Properties Operated.
201-5 Mills Bldg Washington, D. C.

RATES:

1½-inch card
$37.50 per quarter
($36.25 for advertising and $1.25 for subscription)

¾-inch card
$22.50 per quarter
($21.25 for advertising and $1.25 for subscription)

Directory of Engineers

Rocky Mountain and Pacific States

Bowden Engineering Co.
Consulting, Surveying
Supervising Construction
Seattle, Wash., L. C. Smith Bldg.

Elrod Co., Henry Exall
General and Consulting Engineers
Utility Valuations for Rate Regulation. Special Investigations and Reports for Investors. Designs for and Supervision of Water-Works, Sewer Systems, Sewage Disposal Plants, Power Plants and Industrial Works.
Irrigation — Flood Control — Dams.
Los Angeles, Cal. (Temporary address, Hotel Windemere, Santa Monica).
Dallas, Texas, Interurban Bldg

Grunsky, C. E.,
Consulting Engineer.
Valuations, Municipal Engineering, Irrigation & Flood Control. "Manager of C. E. Grunsky Co.," Cons. & Superv. Engrs. San Francisco, Calif, Mechanics Institute Building.

Miller, M. L. & Co.
Civil and Consulting Engineers
Paving, Sewerage, Sewerage Disposal, Water Supply, Light and Power Plants, City Planning, Bridge designing, Investigations and Reports.
2235 Gaylord St., Denver, Colo

Thebo, Starr & Anderton, Inc. *Engineers and Constructors*
Design and Construction of Power Plants Hydro-Electric Irrigation and Industrial Projects, Appraisals, Investigations Reports, Plans and Specifications Sharon Building, San Francisco.. Fresno, Calif.

Cuba and Foreign

Alberto A. Ibargüen
Civil Engineer and Architect.
M. Am. Soc. C. E.—M. S. C. I.
Designs, Specifications, Estimates, and Supervision for Construction of All Kinds. Specialist in Reinforced Concrete Structure.
42 Marti St. Pinar del Rio, Cuba

Conrado E. Martinez, Rolando A. Martinez,
Consulting Engineers.
Sewers, Water Works, Surveys and Appraisals, Inspections, Town Planning, Reports and Designs, Investigations.
Havana, Cuba. 59 Obispo St.

Other Engineers
find this advertising desirable publicity. Why can it not serve you, too?

W. H. Shields
B. Sc. (Eq. Hon Glas.); C. E. (Glas.) B.Sc (W. A.); A.M.I.C.E.; M.W.A.I.E.; M. R.S., W.A.
Civil and Consulting Engineer and Licensed Surveyor
Perth, Australia. Princess Bldg. Cable address: Civileng Perth

J. L. Weller, M. E. I.C.
Consulting Engineer
Canals, Harbors, Docks, Drydocks, Movable Bridges, Dams, Difficult Foundations, Hydro-Electric Developments, Advisory Reports. Herkimer Apartments Hamilton, Ont.

Inspecting and Testing Engineers

Electrical Testing Laboratories, Electrical, Photometrical and Physical Tests. Inspection and Tests of Electrical and Engineering Materials. Main Office and Laboratories, New York, 80th St., and East End Ave.

Keeping Your Card
in this directory makes it easy for those in need of your services to find you quickly.

Hunt, Robert W. & Co.
Robert W. Hunt, Jno. J. Cone, D. W. McNaugher
Bureau of Inspection, Tests and Consultation
Chicago, New York, Pittsburgh, St. Louis, San Francisco, Seattle, Montreal, London.

New York Testing Laboratories.
Chemical & Physical Tests, Microscopical Examinations,
Electrical Tests, Poewr Plant Tests, Expert Inspections Cities and Industries.
80 Washington St New York City.

Dignified Publicity

This directory is the recognized National Center for consulting service in the field of civil engineering and construction.

This is the logical place to find the organization or individual best fitted to render the particular service needed.

The man with a problem—by turning to this Directory of Engineers has a choice of reliable specialists who are ready to aid him.

It saves time and money for the man with a problem, and it offers consulting engineers opportunities for securing additional business in a dignified and ethical manner, through the standard business paper of the field.

Does Your Card Appear Here Regularly?

ENGINEERING

Schools and Colleges

College of Engineering,
Courses in Civil, Mechanical, Electrical, Sanitary, Municipal, Chemical Engineering. Short course in Structural Drafting
Enter any time. No matriculation or registration fees. Expenses ⅓ to ½ less than at other first-class schools. School year—Four quarters of 12 weeks each.
Length of Courses 120 Weeks Save one year and $1000.
Experienced Instructors. Splendid Laboratories.
For catalog, bulletins or information address: Albert Edwin Smith, President, Ohio Northern University, Ada, Ohio.

Lafayette College,
Technical Courses in Chemical, Civil, Electrical, Mechanical and Mining Engineering. Write for illustrated catalogue to the Registrar. Easton, Pa.

New York University College of Engineering
Civil, Mechanical, Chemical and Industrial Engineering.
For information address Chas. Henry Snow, Dean.
University Heights, New York.

Norwich University,
(Founded 1819)
The Military College of Vermont. Academic Courses in Civil and Electrical Engineering. Address Prof. H. R. Roberts.
Northfield, Vermont.

Clarkson College of Technology,
Courses leading to the degrees of Bachelor of Science in Chemical, Civil, Electrical and Mechanical Engineering.
Catalog upon application
Potsdam, N. Y.

College of Engineering
Northwestern University
Five years of broad, thorough training; small classes, in which each student receives individual attention from head professors. Unsurpassed opportunities to see great engineering projects and meet engineers
A young thriving College in an old University.
Write for "Best Preparation for Engineering" and "Booklet of Views."
John F. Hayford, Director.
Evanston, Ill., Swift Hall.

WHAT AND WHERE TO BUY INDEX

A Classified Index of Advertisers in this Issue

Equipment, Apparatus and Supplies Used in the Civil Engineering and Contracting Fields with Names of Manufacturers and Distributors

See Last Page for Alphabetical Index

Acetylene, Compressed
Air Reduction Sales Co.
Linde Air Products Co.

Agitators
Caldwell Co., W. E.

Asbestos & Asbestos Prods.
Carey Co., The Philip

Ash Handling Machinery
Chain Belt Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Portable Machy. Co.
Webster Manufacturing Co.

Asphalt
Carey Co., The Philip
Gilmore Co., A. F.
Standard Oil Co. of Ind.
Standard Oil Co. of N. Y.

Asphalt Plants
Austin Machinery Corp.

Backfillers
Austin Machinery Corp.
Parsons Co.
Pawling & Harnischfeger Co.

Banks
Coal & Iron National Bank

Bar Benders & Cutters
Ransome Concrete Machy. Co.

Bar Chairs, Reinforcing
Universal Clamp Co.

Barges, Concrete
Ambursen Construction Co., Inc.

Bars, Iron & Steel
Buffalo Steel Co.
Ryerson & Son, Joseph T.

Beam Wrapping
Mitchell-Tappen Co.

Belt Dressing
Texas Co.

Belting
Link-Belt Co.
Robins Conveying Belt Co.

Blocks and Tackle
Boston & Lockport Block Co.

Blowers, Pressure
American Gas Furnace Co.

Blueprinting Machinery
Pease Co., C. F.
Wickes Bros.

Blue Print Paper
N. Y. Blue Print Paper Co.

Boilers
Abendroth & Root Mfg. Co.
Babcock & Wilcox Co.
Traylor Engr. & Mfg. Co.

Bolts, Nails, Nuts, Rivets & Spikes
Lackawanna Steel Co.
Ryerson & Son, Joseph T.

Books, Engineering and Technical
McGraw-Hill Book Co.

Bonding Companies
See Searchlight Section

Boxes, Annealing
Blaw-Knox Co.

Brakes, Air
Westinghouse Traction Brake Co.

Bridges
Belmont Iron Works
Berlin Constr. Co.
Blaw-Knox Co.
Boston Bridge Works
Eastern Bridge & Struc. Co.
Fort Pitt Bridge Works
Foundation Co., The
Independent Bridge Co.
Kenwood Bridge Co.
King Bridge Co.
Lackawanna Bridge Wks. Co.
Louisville Bridge & Iron Co.
Milwaukee Bridge Co.
Morava Construction Co.
Mount Vernon Bridge Co.
Parsons, Klapp, Brinckerhoff & Douglass
Penn. Bridge Co. (Pa.)
Phoenix Bridge Co.
Pittsburgh-Des Moines Steel Co.
Raymond Concrete Pile Co.
Riverside Bridge Co.
Shoemaker-Satterthwait Bridge Co.
Virginia Bridge & Iron Co.
Wisconsin Bridge & Iron Co.

Bridges, Bascule
Strauss Bascule Bridge Co.

Bridge Operating Mchy.
Earle Gear & Machine Co.
Steele & Condict, Inc.

Buckets, Clam Shell
Blaw-Knox Co.
Brown Hoisting Mchy. Co.
Haiss Mfg. Co., Inc., Geo.
Hayward Co.
Industrial Works
Kiesler Co., Jos. F.
Lakewood Engineering Co.
Link-Belt Co.
McMyler Interstate Co.
Orton & Steinbrenner Co.
Owen Bucket Co.
Vulcan Iron Works of N. J.
Williams Co., G. H.

Buckets, Concrete
Insley Manufacturing Co.
Ransome Concrete Machy. Co.
Union Iron Works

Buckets, Dragline
Brown Hoisting Mchy. Co.
Hayward Co.
Monighan Machine Co.

Buckets, Dredging and Excavating
Blaw-Knox Co.
Haiss Mfg. Co., Inc., Geo.
Kiesler Co., Jos. F.
Marion Steam Shovel Co.
Osgood Co.
Owen Bucket Co.
Union Iron Works

Buckets, Electric Motor
Hayward Co.

Buckets, Elevator
(See Elevators, Bucket)

Buckets, Orange Peel
Hayward Co.
Industrial Works
Kiesler Co., Jos. F.
McMyler Interstate Co.
Orton & Steinbrenner Co.
Owen Bucket Co.
Vulcan Iron Works of N. J.

Building Paper
Carey Co., The Philip

Buildings, Steel
Belmont Iron Works
Blaw-Knox Co.

Cableways
Blaw-Knox Co.
Flory Manufacturing Co., S.
Lidgerwood Mfg. Co.
Mundy Hoisting Engine Co., J. S.
National Hoisting Eng. Co.
Roebling's Sons Co., J. A.
Wickwire-Spencer Steel Corp

Cableway Excavators
(See Excavators Cableway)

Caissons
Foundation Co., The
Lackawanna Steel Co.

Calcium Carbide
Air Reduction Sales Co.

Cars, Concrete
Easton Car & Constr. Co.
Ransome Concrete Machy. Co.

Cars, Industrial V Dump
Easton Car & Constr. Co.
Insley Mfg. Co.
Lakewood Engineering Co.
Ramapo Iron Works
Western Wheeled Scraper Co.

Carts, Concrete
Gray Iron Foundry Co.
Insley Mfg. Co.
Ransome Concrete Machy. Co.

Castings, Iron and Steel
Amer. Cast Iron Pipe Co.
Central Foundry Co.
Chain Belt Co.
Fox & Co., John
Gray Iron Foundry Co.
Jeffrey Mfg. Co.
Link-Belt Co.
Marion Malleable Iron Wks.
Marion Steam Shovel Co.
U. S. Cast Iron Pipe & Foundry Co.
Warren Fdry. & Mach. Co.

Castings, Street and Sewer
Central Foundry Co.
U. S. Cast Iron Pipe & Fdry. Co.

Castor, Plate
Terry Mfg. Co.

Cement
Carney Cement Co.
Lawrence Cement Co.
Pennsylvania Cement Co.
Portland Cement Ass'n.
Vulcanite Port. Cement Co.

Cement-Guns
Cement-Gun Co.

Cement-Making Machinery
Allis-Chalmers Mfg. Co.
Austin Machinery Corp.
Traylor Engr. & Mfg. Co.
Vulcan Iron Wks. of Wilkes-Barre
Willsea Works, The

Centers, Steel, Collapsible
Blaw-Knox Co.

Chain
Ryerson & Son, Joseph T.

Chain, Steel and Malleable Sprocket
Chain Belt Co.
Haiss Mfg. Co., Geo.
Jeffrey Mfg. Co.
Link-Belt Co.
Webster Manufacturing Co.

Channelers
Sullivan Machinery Co.

Chimneys, Concrete
General Concrete Constr. Co.
Heine Chimney Co.
Rust Engineering Co.
Summerhays & Sons, Co. Wm.
Weber Chimney Co.
Wiederholdt Construction Co.

Chimneys, Radial Brick
American Chimney Corp.
Custodis Chimney Construction Co., Alphons
Heine Chimney Co.
Kellogg Co., M. W.
Rust Engineering Co.
Summerhays & Sons Co. Wm.
Wiederholdt Construction Co.

Chimneys, Steel
Blaw-Knox Co.
Chicago Bridge & Iron Wks.
Honhorst Co., The Jos.
Littleford Bros.

Chloride of Lime
Penna. Salt Mfg. Co.

Chlorinators
Wallace & Tiernan Co., Inc.

Chlorine, Liquid
Electro Bleaching Gas Co.
Wallace & Tiernan Co., Inc.

Chutes, Concrete
Insley Manufacturing Co.
Ransome Concrete Machy. Co.

Clutches, Friction
Webster Manufacturing Co.

Coal and Ore-Conveying Machinery
Allen Co., John F.
Brown Hoisting Machy. Co.
Byers Machine Co.
Chain Belt Co.
Gifford Wood Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Lidgerwood Mfg. Co.
Link-Belt Co.
McMyler Interstate Co.
Portable Machy. Co.
Webster Manufacturing Co.
Wellman-Seaver-Morgan Co.

Coal-Storage Systems
Haiss Mfg. Co., Geo.
Jeffrey Mfg. Co.
Lidgerwood Mfg. Co.
Link-Belt Co.

Cofferdams, Steel
Lackawanna Steel Co.

Column Clamps
Universal Form Clamp Co.

Column Forms
Blaw-Knox Co.

Compressors, Air, Heavy Duty
Allis-Chalmers Mfg. Co.
Chicago Pneumatic Tool Co.
De Laval Steam Turbine Co.
Ingersoll-Rand Co.
McKiernan-Terry Drill Co.
Sullivan Machinery Co.
Westinghouse Traction Brake Co.
Worthington Pump & Machy. Corp.

Compressors, Air, Portable
Cement-Gun Co.
Chicago Pneumatic Tool Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.
Traylor Engr. & Mfg. Co.

Concrete, Chutes
Lakewood Engineering Co.

Concrete Floor Hardener
Anti-Hydro Waterproofing Co.
Sonneborn Sons, Inc., L.
Truscon Laboratories

Concrete Making Machinery
Ransome Concrete Machy. Co.
Willsea Works, The

Concrete Reinforcement
American Steel & Wire Co.
Brown Hoisting Machy. Co.
Buffalo Steel Co.
Consolidated Expanded Metal Co.'s
Keystone Gypsum Fireproofing Co.
Laclede Steel Co.
Lackawanna Steel Co.
Mitchell-Tappen Co.
National Steel Fabric Co.
Northwestern Expanded Metal Co.
Ryerson & Son, Joseph T.
Truscon Steel Co.
U. S. Gypsum Co.
Wickwire-Spencer Steel Corp.

Condensers
Ingersoll-Rand Co.
Manistee Iron Wks.
Worthington Pump & Machy. Corp.

Conveyors, Belt
Chain Belt Co.
Gifford-Wood Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Link-Belt Co.
Portable Machy. Co.
Robins Conveying Belt Co.
Webster Manufacturing Co.
Wellman-Seaver-Morgan Co.

Conveyors, Bucket
Chain Belt Co.
Gifford-Wood Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Link-Belt Co.
Webster Manufacturing Co.
Wellman-Seaver-Morgan Co.

Cordage, Manila & Sisal
New Bedford Cordage Co.

Corner Bead Metal
Consolidated Expanded Metal Co.
Truscon Steel Co.

Cranes, Full Circle
Penn Bridge Co. (N. Y.)
Terry Mfg. Co.

Cranes, Locomotive
Ball Engine Co.
Bay City Dredge Works
Brown Hoisting Machy. Co.
Browning Co.
Byers Mach. Co.
Erie Steam Shovel Co.
Industrial Works
Link-Belt Co.
McMyler Interstate Co.
Marion Steam Shovel Co.
Northwest Engineering Co.
Ohio Locomotive Crane Co.
Orton & Steinbrenner Co.
Osgood Co.
Pawling & Harnischfeger Co.
Thew Shovel Co.
Wiley, Glen M.

Cranes, Traveling
Brown Hoisting Machy Co.
Chesapeake Iron Works
Cleveland Crane & Eng. Co.
Link-Belt Co.
Pawling & Harnischfeger Co.
Toledo Crane Co.

Cranes, Wrecking
Bucyrus Co.
Industrial Works

Creosoted Blocks, Timber, Poles, Cross-Arms Lumber, etc.
Amer. Creosoting Co. (Ky.)
Amer. Creosoting Co. (N.Y.)
Barrett Co.
Colonial Creosoting Co.
Eppinger & Russell Co.
Georgia Creosoting Co.
Southern Wood Preserving Co.
Wyckoff Pipe & Creosoting Co.

Creosoting
Amer. Creosoting Co. (Ky.)
American Creosote Works
Barrett Co.
Colonial Creosoting Co.
Eppinger & Russell Co.
Georgia Creosoting Co.
Wyckoff Pipe & Creosoting Co.

Creosoting Oils
Barret Co.
Protexol Corp.

Crushers and Pulverizers
Acme Road Machy. Co.
Allis-Chalmers Mfg. Co.
Buchanan Co., Inc., C. S.
Jeffrey Mfg. Co.
Orton & Steinbrenner Co.
Traylor Engr. & Mfg. Co.
Universal Road Machy. Co.
Worthington Pump & Machy. Corp.

Culverts, Corrugated
Canton Culvert & Silo Co.
Newport Culvert Co.

Culverts, Metal
Amer. Sheet & Tin Plate Co.
Newport Culvert Co., Inc.
U. S. Cast Iron Pipe & Foundry Co.

Culverts, Nestable & Riveted Corrugated
Canton Culvert & Silo Co.
Newport Culvert Co.

Curb Steel, Protected
Godwin Co., Inc., W. S.
Truscon Steel Co.

Cutting Blowpipes, Oxyacetylene
Milburn Co., Alexander

Dams
Ambursen Construction Co.
Foundation Co., The

Derricks and Derrick Fittings
Byers Mach. Co.
Dobbie Fdry & Machine Co.
Haiss Mfg. Co., Geo.
Hayward Co.
Insley Manufacturing Co.
Lidgerwood Mfg. Co.
McMyler Interstate Co.
Mundy Hoisting Engine Co., J. S.
Penn Bridge Co. (N. Y.)
Terry Mfg. Co.
Wiley, Glen M.

Disinfecting Chemicals
Electro Bleaching Gas Co.
Wallace & Tiernan Co., Inc.

Distributors, Pressure Oil
(See Road Oilers, Pressure)

Ditching Machinery
(See Excavators)

Docks and Harbor Work
Parsons, Klapp, Brinkerhoff & Douglass
Snare Corp., Frederick

Drafting Machines
Universal Drafting Mach Co.

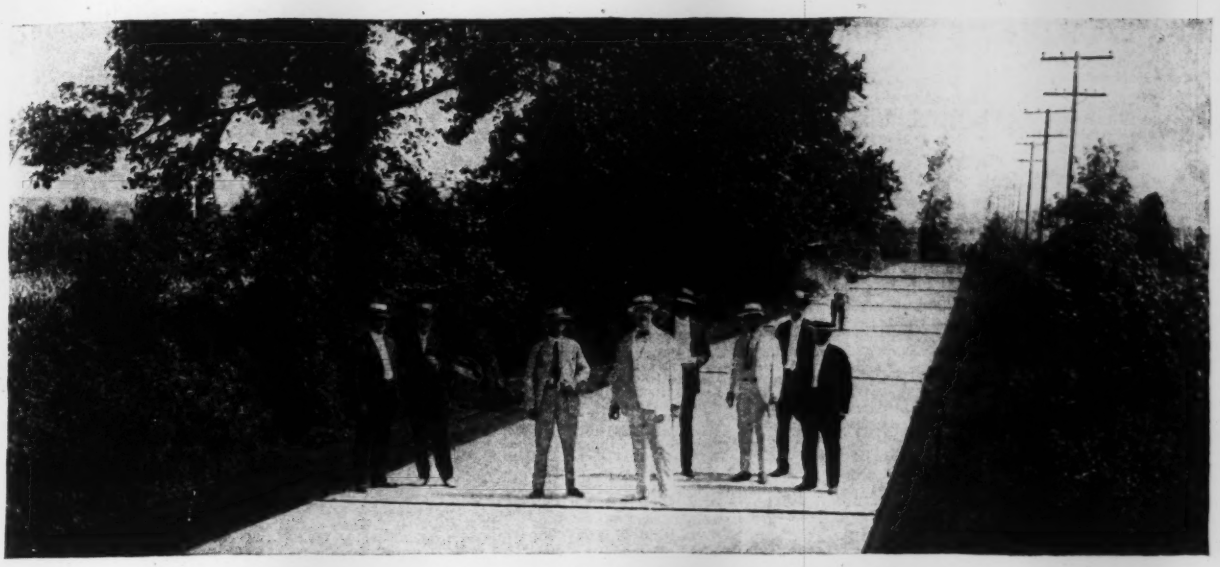
Drafting Room Furniture
Dietzgen Co., Eugene
Economy Drawing Table & Mfg. Co.
Hamilton Manufacturing Co.
Pease Co., C. F.

Drawing Materials
Dietzgen Co., Eugene
Hamilton Manufacturing Co.
Keuffel & Esser Co.

Drawing Tables
(See Tables and Boards, Drawing.)

Dredges
Bay City Dredge Works
Flory Manufacturing Co., S.
Hayward Co.
Lidgerwood Mfg. Co.
Marion Steam Shovel Co.
Osgood Co.

Dredges, Dipper
Austin Machinery Corp.
Ball Engine Co.
Bucyrus Co.
Erie Steam Shovel Co.
Osgood Co.



The beginning of permanent Roads in Chatham County, Ga. Morgan and Dixon Engineers, Savannah, Ga.

Where do you stand in this kind of a picture?

If you are a contractor, an engineer, or a public official having to do with road work, the public will some day picture you—with the roads you have built in the background of the mind's eye.

You will appear in the picture as a *spendthrift* if the roads crack or buckle in a few years.

You will appear as a *builder*—honest—efficient—successful, if the roads last as they should.

Expansion and contraction due to changes in temperature can wreck the finest road and the finest reputation in a single year.

They can *never* wreck a road protected with Carey Elastite Expansion Joint, no matter how long the road is used.

It has been tried in all parts of the country, in all kinds of roads, for seven years and has never failed.

The felt walled feature makes it superior to everything else designed for the purpose. Write for particulars.

THE PHILIP CAREY COMPANY

18 Wayne Avenue, Lockland, **CINCINNATI, OHIO**

Dredges, Hydraulic
Atlantic Gulf & Pacific Co.
Bucyrus Co.
Marion Steam Shovel Co.
Morris Machine Co.

Drills, Core
Ingersoll-Rand Co.
Keystone Driller Co.
McKiernan-Terry Drill Co.
Sullivan Machinery Co.

Drills, Rock
Chicago Pneumatic Tool Co.
Jeffrey Mfg. Co.
Ingersoll-Rand Co.
McKiernan-Terry Drill Co.
Sullivan Machinery Co.

Drums, Holding
Blaw-Knox Co.
Haiss Mfg. Co., Inc., Geo.
Hayward Co.
Monighan Machine Co.

Dryers
Blaw-Knox Co.

Elevators, Bucket
Gifford-Wood Co.
Haiss Mfg. Co., Inc., Geo.
Hendrick Mfg. Co.
Link-Belt Co.
Ohio Locomotive Crane Co.
Webster Manufacturing Co.

Elevators; Contractors' Material
Byers Mach. Co.
Haiss Mfg. Co., Inc., Geo.
Insley Manufacturing Co.
Ransome Concrete Machy. Co.

Elevators, Factory
Ridgway & Son Co., The
Craige

Engineers and Contractors
American Engr. & Const. Co.
Atlantic Gulf & Pacific Co.
Parsons, Klapp, Brinckerhoff & Douglass
Raymond Concrete Pile Co.
Smith, Hauser & McIsaac.
Spencer, White & Prentis
Terry & Tench Co., Inc.
Wellman-Seaver-Morgan Co.
(See also Directory of Engineers).

Engineers' and Draftsmen's Instruments and Supplies
Altenedler & Sons, Theo.
Dietzgen Co., Eugene
Gurley, W. & L. E.
Hamilton Manufacturing Co.
Keuffel & Esser Co.
Lufkin Rule Co.
N. Y. Blue Print Paper Co.
Pease Co., C. F.
White Co., Inc., David

Engines, Gas, Gasoline & Oil
Allis-Chalmers Mfg. Co.
Buda Co., The
Chicago Pneumatic Tool Co.
Climax Engineering Co.
Cushman Motor Works
Fairbanks, Morse & Co.
Ingersoll-Rand Co.
National Hoisting Eng. Co.
Standard Scale & Supply Co.
Wisconsin Motor Mfg. Co.

Engines, High Duty Water-Works
Morris Machine Co.

Engines, Hoisting
(See Hoists)

Engines, Portable
Climax Engineering Co.
Cushman Motor Works

Engines, Steam
Chicago Pneumatic Tool Co.

Excavators, Bucket
Chain Belt Co.

Excavators, Cableway
Lidgerwood Mfg. Co.
Mundy Hoisting Engine Co., J. S.
Sauerman Bros.

Excavators, Ditch & Trench
Austin Machinery Corp.
Baker Mfg. Co.
Ball Engine Co.
Bay City Dredge Works
Bucyrus Co.
Byers Mach. Co.
Erie Steam Shovel Co.
Keystone Driller Co.
Marion Steam Shovel Co.
Northwest Engineering Co.
Osgood Co.
Parsons Co.
Pawling & Harnischfeger Co.
Thew Shovel Co.

Excavators, Dragline
Austin Machinery Corp.
Ball Engine Co.
Bay City Dredge Works
Bucyrus Co.
Byers Mach. Co.
Erie Steam Shovel Co.
Hayward Co.
Marion Steam Shovel Co.
Monighan Machine Co.
Northwest Engineering Co.
Osgood Co.
Pawling & Harnischfeger Co.
Sauerman Bros.
Wiley, Glen. M.

Expanded Metal
Consolidated Expanded Metal Co.
Northwestern Expanded Metal Co.
Truscon Steel Co.

Expansion Bolts
National Lead Co.

Feed Water Heaters
Worthington Pump & Machy. Corp.

Filters, Water, Municipal and Industrial
American Water Softener Co.
Graver Corporation
International Filter Co.
N. Y. Continental Jewell Filtration Co.
Roberts Filter Mfg. Co.
Simplex Valve & Meter Co.
Worthington Pump & Machy. Corp.

Fire Clay
Dickey Clay Mfg. Co.

Fireproofing Material & Construction
Robertson Co., H. H.

Floor Hardener, Concrete
(See Concrete Floor Hardener.)

Flooring, Fireproof
Kerlow Steel Flooring Co.
Irving Iron Works
Universal Safety Tread Co.

Floor Wood, Block
Barrett Co.

Flumes, Iron & Steel
Blaw-Knox Co.

Form Clamps
Insley Mfg. Co.
Universal Form Clamp Co.

Form Tighteners
Marion Malleable Iron Wks.

Forms, Culvert, Road, Sewer, Tunnel, etc,
Blaw-Knox Co.
Foote Concrete Machy. Co.
Metal Forms Corp.

Forms for Curb and Gutter
Blaw-Knox Co.

Forms for Walls, Building Construction, etc.
Blaw Knox Co.
Metal Forms Corp.

Foundations
Foundation Co., The
Lackawanna Steel Co.
MacArthur Concrete Pile & Foundation Co.
New England Foundation Co., The
Raymond Concrete Pile Co.
Smith, Hauser & MacIsaac.
Spencer, White & Prentis.
Underpinning & Foundation Co.

Frogs and Switches, Railway
Easton Car & Constr. Co.
Ramapo Iron Works

Furnaces, Annealing & Tempering
American Gas Furnace Co.

Furnaces, Gas
American Gas Furnace Co.

Garbage Disposal Apparatus
Jeffrey Mfg. Co.

Gas, Chlorine
Electro Bleaching Gas Co.

Gas Producers
Blaw-Knox Co.

Gates, Sluice
Coffin Valve Co.
Coldwell-Wilcox Co.
Crane Co.
Ludlow Valve Mfg. Co.

Gauges, Loss of Head
Simplex Valve & Meter Co.

Gauges, Rates of Flow
Simplex Valve & Meter Co.

Gears
Earle Gear & Mach. Co.

Generators, Electric
Allis-Chalmers Mfg. Co.
Fairbanks-Morse & Co.

Glass, Fireproof
(See Wire Glass)

Governors, Waterwheel
Woodward Governor Co.

Graders, Road
Ball Engine Co.
Erie Steam Shovel Co.
Western Wheeled Scraper Co.

Granite
Granite Paving Block Mfrs.' Assoc. of the U. S., Inc.

Gratings, Subway
Irving Iron Works
Kerlow Steel Flooring Co.
Mitchell-Tappen Co.
Universal Safety Tread Co.

Gravel Washing Plants
Link-Belt Co.
Sauerman Bros.

Gypsum
Keystone Gypsum Fireproofing Co.
U. S. Gypsum Co.

Hammers, Pneumatic
Chicago Pneumatic Tool Co.
National Hoisting Eng. Co.

Hammers, Steam Pile
(See Pile Hammers, Steam)

Heaters, Concrete Water
Graver Corporation

Heaters Tar & Asphalt
Honhorst Co., The Jos.
Littleford Bros.

Hoists, Chain
Chisholm-Moore Mfg. Co., The

Hoists, Concrete Tower
Insley Manufacturing Co.

Hoists, Contractors' Electric
Allis-Chalmers Mfg. Co.
Bay City Dredge Works
Byers Mach. Co.
Dobbie Foundry & Mach.Co.
Flory Mfg. Co., S.
Lidgerwood Mfg. Co.
Monighan Machine Co.
Mundy Hoisting Eng. Co., J. S.
National Hoisting Eng. Co.
Ransome Concrete Machy. Co.
Stroudsburg Engine Works

Hoists, Contractors' Gasoline
Gray Iron Foundry Co.
Lidgerwood Mfg. Co.
Mundy Hoisting Eng. Co., J. S.
National Hoisting Eng. Co.
Stroudsburg Engine Works

Hoists, Contractors' Steam
Allis Chalmers Mfg. Co.
Byers Mach. Co.
Ingersoll-Rand Co.
Lidgerwood Mfg. Co.
Mundy Hoisting Eng. Co.
J. S
National Hoisting Eng. Co.
Stroudsburg Engine Works
Vulcan Iron Wks of Wilkes-Barre, Pa.

Hoists, Electric
O. K. Clutch & Machy. Co.

Hoists, Gasoline
O. K. Clutch & Machy. Co.

Hoists, Pneumatic
Chicago Pneumatic Tool Co.
Ingersoll-Rand Co.
Stroudsburg Engine Works
Sullivan Machinery Co.

Hoppers, Concrete
Insley Manufacturing Co.
Ransome Concrete Machy. Co.

Hoppers, Steel
Erie Steel Constr. Co.
Honhorst Co., The Jos.

Hose, Air
Chicago Pneumatic Tool Co.

Hydrants
Kennedy Valve Mfg. Co.
Ludlow Valve Mfg. Co.
Rensselaer Valve Co.
Smith Mfg. Co., A. P.
Wood & Co., R. D.

Incinerators
Power Specialty Co.

Inserts, Concrete
Truscon Steel Co.

Inspecting Laboratories
(See Directory of Engineers)

Instruments, Drawing
Keuffel & Esser Co.
N. Y. Blue Print Paper Co.

Instruments, Surveying
Ainsworth & Sons, Wm.
Berger & Sons, C. L.
Buff & Buff Mfg. Co.
Gurley, W. & L. E.
Keuffel & Esser Co.
Lietz Co., A.
N. Y. Blue Print Paper Co.
White Co., Inc., David

Iron Work, Structural and Ornamental
Hendrick Mfg. Co.
Irving Iron Works
Kerlow Steel Flooring Co.
Ryerson & Son Co., Jos.
Snead Architectural Iron Works
Universal Safety Tread Co.

Jacks, Lifting
McKiernan-Terry Drill Co.
Norton, Inc., A. O.

Joints, Expansion Paving
Barrett Co.
Carey Co., The Philip
Truscon Steel Co.
Waring-Underwood Co.

Joints, Filler Paving
Barrett Co.
Standard Oil Co. of N. Y.

Joints, Flexible Pipe
Central Foundry Co.
Crane Co.
U. S. Cast Iron Pipe & Foundry Co.
Weston, L. A.

Lath, Expanded Metal
Consolidated Expanded Metal Co's
Mitchell-Tappen Co.
Northwestern Expanded Metal Co.
Waring-Underwood Co.

Leadite
Leadite Co., Inc., The

Lights, Contractors'
Carbic Manufacturing Co.
Milburn Co., Alexander

Loaders, Wagon
(See Wagon Loaders)

Locomotives, Compressed Air
Porter Co., H. K.
Vulcan Iron Wks. of Wilkes-Barre, Pa.

Locomotives, Electric
Jeffrey Mfg. Co.

Locomotives, Fireless Steam
Porter Co., H. K.

Locomotives, Gasoline
Fate Root Heath Co.
Hadfield-Penfield Steel Co.
Industrial Equipment Co.
Lakewood Engineering Co.
Vulcan Iron Wks of Wilkes-Barre, Pa.
Whitcomb Co., Geo. D.

Locomotives, Steam
Davenport Locomotive Wks.
Porter Co., H. K.
Vulcan Iron Wks of Wilkes-Barre, Pa.

Locomotives, Storage Battery
Whitcomb Co., Geo. D.

Lubricants
Greene, Tweed & Co.
Texas Co.

Lumber
Kreetan Co.
Lawson & MacMurray
Pacific Lumber Co., The

Manhole Covers
American Abrasive Metals Co., The
Central Foundry Co.

Manila Drilling Cable
New Bedford Cordage Co.

Manometers
Simplex Valve & Meter Co

Meter Boxes
Pittsburgh Meter Co.

Meter Provers
Hersey Mfg. Co.
Pittsburgh Meter Co.

Meters, Boiler Feed Water
Builders Iron Foundry

Meters, Current
Gurley, W. & L. E.

Meters, Gas and Steam
Builders Iron Foundry
Wallace & Tiernan Co., Inc.

Meters, Venturi
Builders Iron Foundry

Meters, Water, Oil, etc.
Builders Iron Foundry
Gamon Meter Co.
Hersey Mfg. Co.
Neptune Meter Co.
Pittsburgh Meter Co.
Simplex Valve & Meter Co.

Mixers, Asphalt
(See Mixers, Hot)

Mixers, Concrete
Austin Machinery Corp.
Cement Gun Co.
Chain Belt Co.
Foote Concrete Machy. Co.
Gray Iron Foundry
Lakewood Engineering Co.
Ransome Concrete Machy. Co.
Standard Scale & Supply Co.
Traylor Engr. & Mfg. Co.

Mixers, Grout
Austin Machinery Corp.
Ransome Concrete Machy. Co.
Union Iron Works

Mixers, Hot
Austin Machinery Corp.

Mixers, Mortar
Austin Machinery Corp.
Ransome Concrete Machy. Co.

Mixers, Paving
Austin Machinery Corp.
Chain Belt Co.
Foote Concrete Machy. Co.
Lakewood Engineering Co.
Ransome Concrete Machy. Co.

Mixers, Pneumatic
Ransome Concrete Machy. Co.

Mortar
Carney Cement Co.

Motors, Electric
Allis-Chalmers Mfg. Co.
Fairbanks-Morse & Co.
Westinghouse Traction Brake Co.

Motors, Gasoline
Buda Co., The
Wisconsin Motor Mfg. Co.
Van Dorn Iron Works Co.

Motor-Truck Bodies
Economy Hoist & Body Co.
Wood Hydraulic Hoist and Body Co.

Motor Trucks
(See Trucks, Motor)

Nitrogen
Linde Air Products Co.

Oil Lubricating
Texas Co.

Overhead Trolley System
Chisholm-Moore Mfg. Co., The

Oxy-Acetylene Process
Air Reduction Sales Co.
Blaw-Knox Co.
Linde Air Products Co.

Oxygen
Air Reduction Sales Co.
Linde Air Products Co.

Packing, Water Pipe
Greene, Tweed & Co.
Jenkins Bros.

Paints, Graphite
Truscon Laboratories

Paints, Light Reflecting
Cheesman & Elliot Co.
Truscon Laboratories

Paints, Metal Protective
Barrett Co.
Carey Co., The Philip
Cheesman & Elliot Co.
National Lead Co.
Protexol Corp.
Ruberoid Co., The
Truscon Laboratories

Partitions
Keystone Gypsum Fireproofing Co.
U. S. Gypsum Co.

Paving, Asphalt
Texas Co.

Paving Blocks, Creosoted Wood
See Creosoted Block Timber Poles, Cross-Arms, Lumber etc.

Paving Blocks, Granite
Granite Paving Block Mfrs' Assoc. of the U. S., Inc.

Paving Breakers
Ingersoll-Rand Co.

Paving Guards, Steel
Godwin Co., Inc., W. S.

Paving Joint Filler
Texas Co.
Kentucky Rock Asphalt Co.

Penstocks
Blaw-Knox Co.
Lackawanna Steel Co.

Pile Drivers
Industrial Works
McKiernan-Terry Drill Co.
McMyler Interstate Co.
Union Iron Works

Pile Hammers, Steam
Industrial Works
McKiernan-Terry Drill Co.
National Hoisting Eng. Co.
Union Iron Works
Vulcan Iron Works of Chicago

Piles, Concrete
MacArthur Concrete Pile & Foundation Co.
New England Foundation Co., Inc.
Raymond Concrete Pile Co.

Piling, Interlocking Steel
Foundation Co., The
Lackawanna Steel Co.

Pipe Bends
East Jersey Pipe Co.

Pipe, Cast Iron
Amer. Cast Iron Pipe Co.
Central Foundry Co.
Fox & Co., John
Glamorgan Pipe & Fdry Co.
U. S. Cast Iron Pipe & Foundry Co.
Warren Fdry. & Mach. Co.
Wood & Co., R. D.

Pipe Coils
Superheater Co.

Pipe, Concrete
Independent Concrete Pipe Co.
Lock Joint Pipe Co.

Pipe, Corrugated
Canton Culvert & Silo Co.
Newport Culvert Co.

Pipe Covering, Asbestos
Carey Co., The Philip

Pipe Covering, Wood
Michigan Pipe Co.
Standard Wood Pipe Co.
Wyckoff & Son Co., A.

Pipe, Dredge
Machold & Riddell

Pipe Fittings
Builders Iron Foundry Co.
Central Foundry Co.
U. S. Cast Iron Pipe & Foundry Co.
Westinghouse Traction Brake Co.
Weston, L. A.

Pipe Joint Compounds (Pressure)
Leadite Co., Inc., The

Pipe, Lock Bar
East Jersey Pipe Co.

Pipe, Lock Joint
Independent Concrete Pipe Co.
Lock Joint Pipe Co.
United Concrete Pipe Co.

Pipe, Reinforced Concrete
Austin Machinery Corp.

Pipe, Riveted Steel
American Spiral Pipe Wks.
Blaw-Knox Co.
East Jersey Pipe Co.
Machold & Riddell

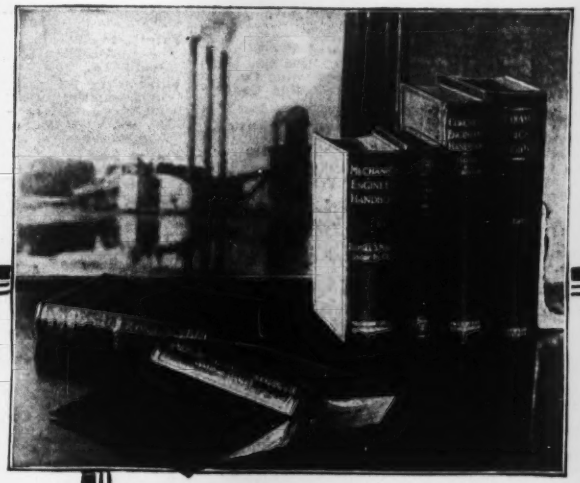
Pipe Shoes
Marion Malleable Iron Wks.

Pipe, Spiral Riveted
Abendroth & Root Mfg. Co.
American Spiral Pipe Wks.
Blaw-Knox Co.

Pipe, Tap Welded
American Spiral Pipe Wks.

How many of these books should YOU own?

Don't miss this opportunity to examine any of them FREE—for 10 days



Hool and Johnson's

1. Concrete Engineers' Handbook

276 pages, 6 x 9, flexible, illustrated, $6.00 net, postpaid.

A concise encyclopedia of modern concrete construction—a working manual for the concrete engineer. The material has been collected by a staff of engineers, each one a specialist in his particular branch of concrete construction.

Ketchum's

2. Structural Engineers' Handbook

896 pages, 6 x 9, flexible, illustrated, $6.00 net, postpaid.

This book contains over 890 pages crammed full with data, details, specifications and tables—clear, practical, get-at-able.

Structural engineers, draftsmen, and construction engineers all over the country unite in their praise of this practical handbook.

Gillette's

3. Earthwork and Its Cost

1346 pages, pocket size, flexible, $6.60 net, postpaid.

A new handbook covering every phase of earth excavation. Detailed cost data on every operation so itemized that by proper rate substitutions they may be used under all conditions—money-saving and time-conserving methods and machines are described in detail.

Gillette's

4. Handbook of Rock Excavation

825 pages, 6 x 9, $6.00 net, postpaid.

This book covers every phase of rock excavation. It is a complete manual of the best modern practice in drilling and handling rock of all kinds under all conditions, illustrating latest machines and methods and including costs of actual work done.

King's

5. Handbook of Hydraulics

420 pages, flexible, pocket size, $3.50 net, postpaid.

The only modern handbook devoted exclusively to hydraulics. The reader of this book becomes at once familiar with every phase of common practice—many special problems, much new information never before published.

Harger and Bonney's

6. Highway Engineers' Handbook

986 pages, 4½ x 7, flexible, $5.00 net, postpaid.

A new third edition of the highway engineer's most practical field book. The data given are an accumulation of actual records used in road survey, design, construction and maintenance.

Flinn, Weston and Bogart's

7. Waterworks Handbook

824 pages, 6 x 9, flexible, $6.00 net, postpaid.

A presentation in clear, simple form, of the essential tables, facts and methods that will answer any of your water system problems, ranging from the sources of water supply, through the collections, transportation, delivery, distribution of water, to the character and treatment of water.

Dana's

8. Handbook of Construction Equipment

849 pages, 4½ x 7, flexible, $6.00 net, postpaid.

This book helps you to get the most out of every dollar spent on construction equipment. It helps you to keep your costs down. The prices are revised as of 1920. Costs are itemized thoroughly so as to show materials, machines, tools, labor, repairs, depreciation, etc., separately.

Gillette's

9. Handbook of Cost Data

1854 pages, illustrated, pocket size, $6.00 net, postpaid.

The cost of every conceivable civil engineering operation, from cement sidewalks to railroad systems. All engineers and contractors will find it to be a book of definite and practical usefulness to them at all times.

Hool and Johnson's

10. Handbook of Building Construction

Two volumes (not sold separately)

1474 pages, 6 x 9, flexible, $10.00 net, postpaid.

This great two-volume handbook describes thoroughly modern building design and construction down to the smallest detail.

It offers architects, construction engineers, contractors, and builders a body of information on practical construction that has never before been even approximated.

Principles, methods, cost, tables, and reference data are all spread out before you in these two handy books for quick reference and constant use.

Free Examination Coupon

McGraw-Hill Book Company, Inc., 370 Seventh Avenue, New York.

You may send me on 10 days' approval—

.....

.....

.....

.....

I agree to pay for the books or return them postpaid within 10 days of receipt.

Subscriber to Engineering News-Record?.....

Member Am. Soc. C. E.? .....

Signed .....

(Please print)

Address .....

Official Position .....

Name of Company .....

(Books sent on approval to retail purchasers in the U. S. and Canada only.) N-R-6-29-22

Pipe, Vitrified Clay
Dickey Clay Mfg. Co.

Pipe, Wood
American Wood Pipe Co.
Michigan Pipe Co.
Pacific Tank & Pipe Co.
Standard Wood Pipe Co.
Wyckoff & Son Co., A.

Plaster
Keystone Gypsum Fireproofing Co.
U. S. Gypsum Co.

Pneumatic Tools
Chicago Pneumatic Tool Co.
Ingersoll-Rand Co.

Poles, Creosoted Wood
Amer. Creosoting Co. (Ky.)
Colonial Creosoting Co.
Georgia Creosoting Co.

Poles, Steel Structural
Blaw-Knox Co.

Pressed Steel Products
Blaw-Knox Co.

Pulverizers
Jeffrey Mfg. Co.

Pumps, Air Lift
Chicago Pneumatic Tool Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.
Traylor Engr. & Mfg. Co.

Pumps, Boiler Feed, Steam
Earle Gear & Machine Co.
Fairbanks-Morse & Co.
Ingersoll-Rand Co.
Lea-Courtenay Co.
Worthington Pump & Machy. Corp.

Pumps, Centrifugal and Multi-Stage High Lift
De Laval Steam Turbine Co.
Earle Gear & Machine Co.
Fairbanks-Morse & Co.
Ingersoll-Rand Co.
Keystone Driller Co.
Lea-Courtenay Co.
Manistee Iron Works
Morris Machine Works
Worthington Pump & Machy. Corp.

Pumps, Contractors'
Edson Manufacturing Co.
Ingersoll-Rand Co.
Standard Seale & Supply Co.

Pumps, Deep Well
Cook, A. D.
Fairbanks-Morse & Co.
Keystone Driller Co.
Worthington Pump & Machy. Corp.

Pumps, Diaphragm
Boston & Lockport Block Co.
Edson Manufacturing Co.
Manistee Iron Works

Pumps, Dredging and Sand
Marion Steam Shovel Co.
Morris Machine Works
Worthington Pump & Machy. Corp.

Pumps, Elevator
Worthington Pump & Machy. Corp.

Pumps, Power
Cook, A. D.
Fairbanks-Morse & Co.
Lea-Courtenay Co.
Manistee Iron Works
Traylor Engr. & Mfg. Co.
Worthington Pump & Machy. Corp.

Pumps, Underwriters' Centrifugal
Allis-Chalmers Mfg. Co.
Earle Gear & Machine Co.
Lea-Courtenay Co.
Manistee Iron Works

Purifiers, Feed Water
N. Y. Continental Jewell Filtration Co.

Pyrometers
Taylor Instrument Cos.

Rail and Rail Joints, Fastening & Specialties
Lackawanna Steel Co.
Rail Joint Co.

Railroad Ditchers
Ball Engine Co.
Erie Steam Shovel Co.
Marion Steam Shovel Co.
Osgood Co.

Railways, Industrial
Easton Car & Constr Co.

Recorders, Water Stage
Gurley, W. & L. E.

Reinforcing Bar Couplings
Marion Malleable Iron Wks.

Reinforcing Metal for Concrete Work
Amer. Steel & Wire Co.
Lackawanna Steel Co.

Reinforcing, Concrete
(See Concrete Reinforcement)

River and Harbor Work
Raymond Concrete Pile Co.

Riveting Machines
Allen, John F.
Chicago Pneumatic Tool Co.

Road Finishers
Austin Machy. Corp.

Road Oilers, Pressure
Austin Machy. Corp.

Road Oils & Preservatives
Barrett Co.
Standard Oil Co. of Ind.
Standard Oil Co. of N. Y.
Texas Co.
Universal Road Machy. Co.

Road Rollers, Gasoline and Steam
Acme Road Machy. Co.
Buffalo-Springfield Roller Co.

Rollers, Concrete
Macon Concrete Roller Co.

Rolls, Crushing
Allis-Chalmers Mfg. Co.
Jeffrey Mfg. Co.

Roofing, Metal
Amer. Sheet & Tin Plate Co.
Traylor Engr. & Mfg. Co.

Roofing, Prepared
Barrett Co.
Carey Co., The Philip
Texas Co.

Roofing, Tile
Amer. Cement Tile Mfg. Co.
Keystone Gypsum Fireproofing Co.
Truscon Laboratories
U. S. Gypsum Co.

Rope, Manila, Hoisting and Transmission
New Bedford Cordage Co.

Rope, Wire, Transmission Hoisting or Haulage
American Steel & Wire Co.
Leschen & Sons Rope Co.
Roeblings Sons Co., J. A.
Wickwire-Spencer Steel Corp.

Sash Operating Apparatus
Allison Steel Products Co.
Drouve Co., G.

Sash Steel, Window
(See Window Sash)

Saw Rigs, Portable
Industrial Works

Scales
Fairbanks-Morse & Co.

Scales Portable
Black & Decker Mfg. Co., The

Schools & Colleges
See Directory of Engineers
Hamilton Inst., Alexander

Scrapers, Scarifiers, Plows, Etc.
Baker Mfg. Co.
Western Wheeled Scraper Co.

Screens, Revolving
Buchanan Co., Inc., C. G.

Screens, Rotary
Traylor Engr. & Mfg. Co.

Screens, Sand, Gravel and Coal
Chain Belt Co.
Haiss Mfg. Co., Inc., Geo.
Hendrick Mfg. Co.
Link-Belt Co.
Webster Mfg. Co.
Wickwire-Spencer Steel Corp.

Screens, Water Intake
Chain Belt Co.
Link-Belt Co.

Seperators, Magnetic
Buchanan Co., Inc., C. G.

Sewage Disinfection
Electro Bleaching Gas Co.
Wallace & Tiernan Co. Inc.

Shafting
Ryerson & Son, Joseph T.

Sharpening Machines, Drill Bit
Ingersoll-Rand Co.

Sheaves
Haiss Mfg. Co., Inc., Geo.

Sheets, Iron and Steel
Amer. Sheet & Tin Plate Co.
Ryerson & Son, Joseph T.

Sheets, Roofing & Siding
Amer. Sheet & Tin Plate Co.
Robertson Co., H. H.
Ryerson & Son, Joseph T.

Shores, Adjustable
Hodges-Edelman Co.

Shovels, Electric
Ball Engine Co.
Bucyrus Co.
Erie Steam Shovel Co.
Keystone Driller Co.
Marion Steam Shovel Co.
Thew Shovel Co.

Shovels, Gasoline
Marion Steam Shovel Co.
Pawling & Harnischfeger Co.
Thew Shovel Co.

Shovels, Picks, Crowbars, etc.
Pittsburgh Shovel Co.

Shovels, Steam
Ball Engine Co.
Bucyrus Co.
Erie Steam Shovel Co.
Keystone Driller Co.
Marion Steam Shovel Co.
Osgood Co.

Skips, Stone
Insley Manufacturing Co.
Thew Shovel Co.

Skylights
Allison Steel Products Co.
Drouve Co., G.
Robertson Co., H. H.

Slate, Structural
Structural Slate Co.

Spreaders, Ballast
Bucyrus Co.

Sprinklers and Sweepers Street
Austin Machinery Corp.

Standpipes, Tanks & Towers
Blaw-Knox Co.
Caldwell Co., W. E.
Chicago Bridge & Iron Wks.
Pacific Tank & Pipe Co.
Pittsburgh-Des Moines Steel Co.

Steam Specialties
Jenkins Bros.

Steel
Buffalo Steel Co.
Ryerson & Son, Joseph T.

Steel Plate Construction
Blaw-Knox Co.
East Jersey Pipe Co.
Hendrick Mfg. Co.
Honhorst Co., The Jos.
Lackawanna Steel Co.
Littleford Bros.
Pittsburgh-Des Moines Steel Co.
Union Iron Works
Vulcan Iron Wks. of N. J.
Williams Co., G. H.

Steel, Structural
Belmont Iron Works
Berlin Construction Co.
Blaw-Knox Co.
Boston Bridge Works
Buffalo Steel Co.
Chesapeake Iron Works
Eastern Bridge & Struc. Co.
Fort Pitt Bridge Works
Kenwood Bridge Co.
King Bridge Co.
Lackawanna Bridge Wks Co.
Lackawanna Steel Co.
Louisville Bridge & Iron Co.
Milwaukee Bridge Co.
Minneapolis Steel & Machinery Co.
Morava Construction Co.
Mount Vernon Bridge Co.
Penn Bridge Co. (Pa.)
Phoenix Bridge Co.
Pittsburgh-Des Moines Steel Co.
Riverside Bridge Co.
Shoemaker-Satterwait Bridge Co.
Snare Corp., Frederick
Snead Architectural Iron Works
Strauss Bascule Bridge Co.
Triest Contracting Corp.
Virginia Bridge & Iron Co.
Wisconsin Bridge & Iron Co.

Steel, Tool
Ingersoll-Rand Co.
Ryerson & Son Co., Jos. J.

Stokers
Babcock & Wilcox Co.

Strainers, Well
Cook, A. D.

Superheaters
Babcock & Wilcox Co.
Power Specialty Co.
Superheater Co.

Tables and Boards, Drawing
Dietzgen Co., Eugene
Economy Drawing Table & Mfg. Co.
Hamilton Mfg. Co.
Pease Co., C. F.

Tampers, Power
Pawling & Harnischfeger Co.

Tanks, Air Compressor
Chicago Pneumatic Tool Co.
East J rsey Pipe Co.
Westinghouse Traction Brake Co.

Tanks, Oil
Blaw-Knox Co.

Tanks, Steel
Caldwell Co., W. E.
Petroleum Iron Works Co.
Chicago Bridge & Iron Wks.
Graver Corp.
Littleford Bros.
Pittsburgh-Des Moines Steel Co.

Tanks, Wood
American Wood Pipe Co.
Caldwell Co., W. E.
Pacific Tank & Pipe Co.

Tapes, Steel and Metallic
Dietzgen Co., Eugene
Hamilton Mfg. Co.
Keuffel & Esser Co.
Lufkin Rule Co.

Tar
Barrett Co.

Testing Laboratories
(See also Engineers' Directory).

Thermometers
Taylor Instrument Cos.

Threshold Plates
American Abrasive Metals Co.

Ties, Creosoted Wood
Amer. Creosoting Co. (Ky.)
Colonial Creosoting Co.
Georgia Creosoting Co.

Tile, Concrete Bldg.
Keystone Gypsum Fireproofing Co.
Truscon Laboratories
U. S. Gypsum Co.

Tile, Roof Cement
American Cement Tile Manufacturing Co.
Truscon Laboratories

Tin Plate
Amer. Sheet & Tin Plate Co.

Towers, Concrete
(See Hoists, Conc. Tower)

Towers, Radio
Blaw-Knox Co.

Towers, Transmission
Blaw-Knox Co.

Track, Industrial and Portable
Easton Car & Constr. Co.
Lackawanna Steel Co.

Trailers
Watson Products Corp.

Transits and Levels
Ainsworth & Sons, Wm.
Berger & Sons Co., C. L.
Buff & Buff Mfg. Co.
Gurley, W. & L. E.

Transmission Machinery, Power
Chain Belt Co.
Link-Belt Co.

Treads, Safety
American Abrasive Metals Co., The
Irving Iron Works
Kerlow Steel Flooring Co.
Universal Safety Tread Co.

Trolleys, I-Beam
Brown Hoisting Machy. Co.

Trucks, Motor
Chicago Pneumatic Tool Co.
General Motors Truck Co.
Watson Products Corp.

Tunnel Liner Plates
Blaw-Knox Co.

Turbines, Hydraulic Impulse and Reaction
Allis-Chalmers Mfg. Co.
Pelton Water Wheel Co.
Smith Co., S. Morgan
Worthington Pump & Machy. Corp.

Turbines, Steam
Allis-Chalmers Mfg. Co.
De Laval Steam Turbine Co.

Turntables
Easton Car & Constr. Co.

Underpinning
Foundatioin Co., The
Smith, Hauser & MacIsaac
Spencer White & Prentis
Underpinning & Foundation Co.

Unloaders
Ball Engine Co.
Erie Steam Shovel Co.

Unloaders, Car
Haiss Mfg. Co., Geo.
Wellman-Seaver-Morgan Co.

Valves, Air, Water, Steam and Gas
Chapman Valve Mfg. Co.
Coffin Valve Co.
Coldwell-Wilcox Co.
Crane Co.
Golden-Anderson Valve Specialty Co.
Kennedy Valve Mfg. Co., The
Ludlow Valve Mfg. Co.
Powell Co., Wm.
Rensselaer Valve Co.
Simplex Valve & Meter Co.
Smith Mfg. Co., A. P.

Valves, Altitude
Golden-Anderson Valve Specialty Co.
Ludlow Valve Mfg. Co.

Valves, Angle, Check, Gate and Globe
Chapman Valve Mfg. Co.
Coffin Valve Co.
Golden-Anderson Valve Specialty Co.
Jenkins Bros.
Ludlow Valve Mfg. Co.
Simplex Valve & Meter Co
Westinghouse Traction Brake Co.

Valves, Automatic
Golden-Anderson Valve Specialty Co.
Kennedy Valve Mfg. Co., The
Ludlow Valve Mfg. Co.
Westinghouse Traction Brake Co.

Valves, Control, Electric
Dean, Ltd., Payne

Valves, Float
Golden-Anderson Valve Specialty Co.

Valves, Regulating
Golden-Anderson Valve Specialty Co.
Ludlow Valve Mfg. Co.
Simplex Valve & Meter Co

Valves, Return
Golden-Anderson Valve Specialty Co.

Valves, Safety
Golden-Anderson Valve Specialty Co.
Ludlow Valve Mfg. Co.

Valves, Sewage
Chapman Valve Mfg. Co.

Valves, Sluice
Chapman Valve Mfg. Co.
Coffin Valve Co.

Ventilators
Allison Steel Products Co.
Drouve Co., G.
Robertson Co., H. H.

Wagons, Asphalt
Watson Products Corp.

Wagons, Dumping
Watson Products Co.
Western Wheeled Scraper Co.

Wagon Loaders
Austin Machinery Corp.
Ball Engine Co.
Erie Steam Shovel Co.
Gifford Wood Co.
Haiss Mfg. Co., Inc., Geo.
Jeffrey Mfg. Co.
Link-Belt Co.
Portable Machy. Co.

Water-Main Cleaning
National Water Main Cleaning Co.

Waterproofing Compounds and Materials
Anti-Hydro Waterproofing Co.
Barrett Co.
Carey Co., The Philip
Mogul Products Corp.
Sonneborn Sons, L.
Texas Co.
Truscon Laboratories

Water Purification
Electro Bleaching Gas Co.
Wallace & Tiernan Co., Inc.

Water Softeners
Amer. Water Softener Co.
Graver Corporation
International Filter Co.
N. Y. Continental Jewell Filtration Co.
Roberts Filter Mfg. Co.

Water Stage Recorders
Leupold Voelpel Co.

Water Sterilization
Electro Bleaching Gas Co.
Wallace & Tiernan Co., Inc.

Water Wheels, Impulse and Reaction
Pelton Water Wheel Co.
Smith Co., S. Morgan
Worthington Pump & Machy. Corp.

Weighing Machines
Black & Decker Mfg. Co., The

Welding and Cutting Apparatus
Air Reduction Sales Co.
Blaw-Knox Co.
Milburn Co., Alexander

Winches, Ship, Hand, Steam and Electric
Brown Hoisting Mchy. Co.
Dobbie Frdy. & Mach. Co.
Lidgerwood Mfg. Co.
Mundy Hoisting Eng. Co., J. S.
National Hoisting Eng. Co.

Window Sash Putty
Truscon Laboratories

Window Sash Steel
Allison Steel Products Co.

Wire Glass
Mississippi Wire Glass Co

Wire Mesh, Reinforcing
Wickwire-Spencer Steel Corp.

Wire Rope
(See Rope, Wire)

Wire and Cable, Electrical
American Steel & Wire Co.

Wood Casings
Michigan Pipe Co., The

Wood Preservatives
Barrett Co.
Mogul Products Corp.
Protexol Corp.
Truscon Laboratories

Wrenches
Greene, Tweed & Co.

RU-BER-OID

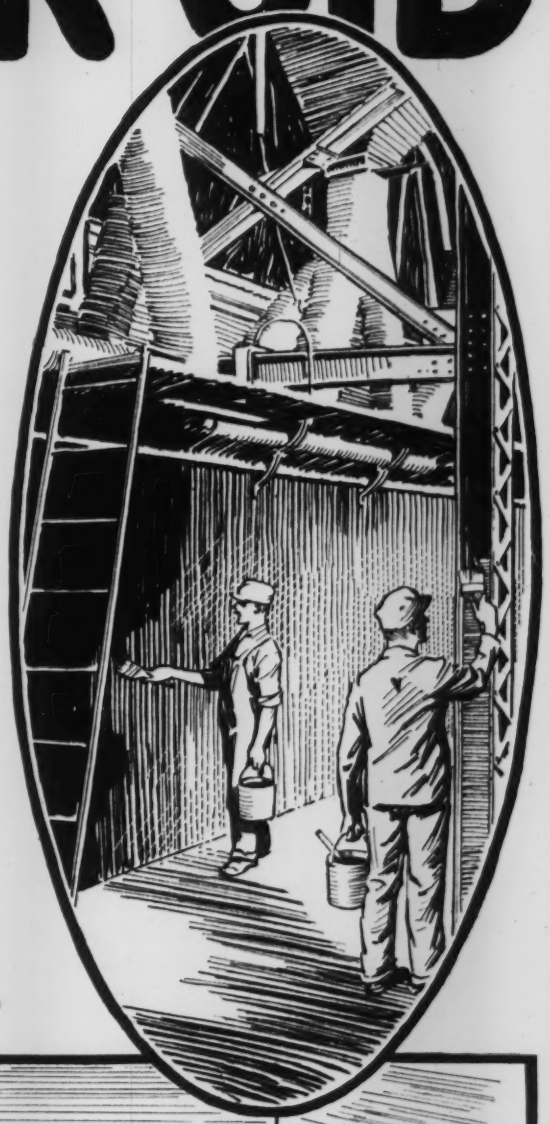
Reduce Maintenance Costs

Ruberoid Enamel No. 166 saves rods, girders, flues, machinery, braces, pipes, sprinkler systems, any equipment from the corrosive action of vapors or acid fumes. Your interior painting can be safely taken care of with Ruberoid, but more than that *it will materially reduce your maintenance costs.*

The reason for this economy is simply that in putting on, to begin with, a paint which has proved its worth by actual use in hundreds of industries, a paint in which you can have absolute confidence, you are figuring protection on a cost-per-year basis and not on an original-outlay basis.

In choosing a preservative paint, consider the service Ruberoid Paints have already rendered in actual use on factory equipment and all kinds of interior work. The Ruberoid Co. has been manufacturing preservative paints for more than thirty years and this experience is back of all Ruberoid Paints. It assures you that in Ruberoid you are getting the best preservative paint that can be made—a paint that combines all the qualities necessary to make a perfect protective coating.

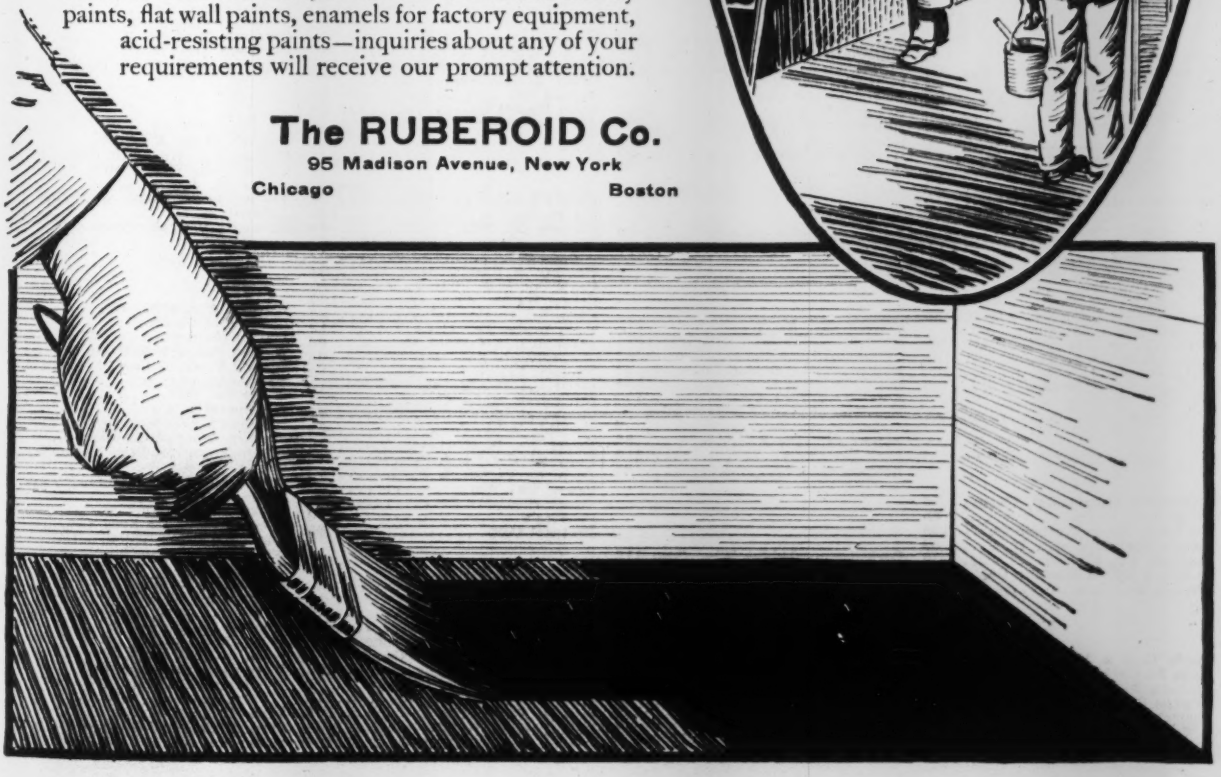
Ruberoid Roof-coating and Plastic, masonry finish, in colors for outside walls, full line of house and factory paints, flat wall paints, enamels for factory equipment, acid-resisting paints—inquiries about any of your requirements will receive our prompt attention.



The RUBEROID Co.

95 Madison Avenue, New York

Chicago Boston



ALPHABETICAL INDEX TO ADVERTISEMENTS

Page

Abendroth & Root Mfg. Co.....106
Acme Road Machinery Co..... 80
Ainsworth & Sons, Wm.....114
Air Reduction Sales Co..... 86
Allen Co., John F..... 86
Allis-Chalmers Mfg. Co.....109
Allison Steel Products Co..... 88
Altenedер & Sons, Theo.....114
Ambursen Constr. Co..... 91
American Abrasive Metals Co.. 88
American Cast Iron Pipe Co....106
Amer. Cement Tile Mfg. Co..... 88
American Chimney Corp.....111
American Creosote Works..... 85
American Creosoting Co. (N.Y.). 85
American Creosoting Co. (Ky.).. 85
American Engr'g & Constr. Co.. 84
American Gas Furnace Co.....110
American Sheet & Tin Plate Co. 88
American Spiral Pipe Works...106
American Steel & Wire Co..... 94
American Water Softener Co....104
American Wood Pipe Co.....105
Anti-Hydro Waterproofing Co... 90
Atlantic Gulf & Pacific Co..... 94
Austin Machinery Corp..... 13

Babcock & Wilcox Co.....110
Baker Mfg. Co., The..... 77
Ball Engine Co..... 9
Barrett Co.....4th Cover
Bay City Dredge Works..... 93
Belmont Iron Works.....113
Berger & Sons, C. L.....116
Berlin Construction Co.....112
Black & Decker Mfg. Co., The.. 78
Blaw-Knox Co.....19, 112
Boston Bridge Works, Inc.....112
Boston & Lockport Block Co..105
Brown Hoisting Machy. Co..... 11
Browning Company 98
Buchanan Co., Inc., C. G..... 4
Buckeye Traction Ditcher Co.... 30
Bucyrus Company 29
Buda Co., The..... 17
Buff & Buff Mfg. Co.....114
Buffalo-Springfield Roller Co... 80
Buffalo Steel Co..... 87
Builders Iron Foundry.....100
Byers Machine Co..... 97

Caldwell Co., W. E.....110
Canton Culvert & Silo Co., The 83
Carbic Mfg. Co..... 86
Carey Co., The Philip.....123
Cement-Gun Co., Inc..... 90
Central Foundry Co.....106
Chain Belt Co.....20, 21
Chapman Valve Mfg. Co., The..103
Cheesman-Elliot Co..... 88
Chesapeake Iron Works.....113
Chicago Bridge & Iron Works..110
Chicago Pneumatic Tool Co.... 8
Chisholm-Moore Mfg. Co.....109
Cleveland Crane & Engr. Co.... 98
Climax Engineering Co..... 96
Coal & Iron National Bank.....103
Coffin Valve Co..... 36
Coldwell-Wilcox Co.....102
Colonial Creosoting Co., Inc.... 85
Consolidated Expanded Metal Cos. 87
Cook, A. D.....108
Crane Company 106
Cushman Motor Works..... 89
Custodis Chimney Constr. Co., Alphons 111

Davenport Locomotive Works.. 76
Dean, Ltd., Payne..... 35
De Laval Steam Turbine Co....109
Dickey Clay Mfg. Co., W. S.... 83
Dietzgen Co., Eugene.....116
Dobbie Fdry. & Machine Co.... 95
Drouve Co., G..... 88

Earle Gear & Mach. Co...108, 112
East Jersey Pipe Co.....107
Eastern Bridge & Structural Co.113
Easton Car & Construction Co.. 76
Economy Drawing Table & Mfg. Co. 116
Economy Hoist & Body Co..... 78

Page

Edson Mfg. Co.....108
Electro Bleaching Gas Co.....104
Eng'g Schools & Colleges.....121
Engineers Directory 118
Eppinger & Russell Co..... 85
Erie Steam Shovel Co..... 9
Erie Steel Constr. Co..... 78

Fairbanks-Morse & Co.....109
Fate-Root-Heath Co..... 76
Flory Mfg. Co., S..... 95
Foote Concrete Mchy. Co..... 23
For Sale Ads..... 54
Fort Pitt Bridge Works.....112
Foundation Co., The..... 32
Fox & Co., John.....102

Gamon Meter Co.....100
General Concrete Constr. Co....110
General Motors Truck Co. 2nd Cover
Georgia Creosoting Co., Inc.... 85
Gifford-Wood Co.....109
Glamorgan Pipe & Fdry. Co.....106
Godwin Co., Inc., W. S..... 82
Golden-Anderson Valve Specialty Co. 37
Granite Paving Block Mfrs. Assoc. of the U. S. Inc., The.. 82
Graver Corporation 104, 110
Gray Iron Foundry Co..... 89
Greene, Tweed & Co..... 86
Gurley, W. & L. E.....114

Hadfield-Penfield Steel Co..... 76
Haiss Mfg. Co., Geo..... 15
Hamilton Mfg. Co.....116
Hayward Co..... 98
Heine Chimney Co.....111
Hendrick Mfg. Co..... 90
Hersey Mfg. Co.....102
Hodges-Edelman Co..... 87
Honhorst Co., The Jos..... 80

Independent Bridge Co.....113
Independent Concrete Pile Co.. 84
Industrial Equipment Co..... 76
Industrial Works 97
Ingersoll-Rand Co..... 33
Insley Mfg. Co..... 25
Inspecting Engineers 121
International Filter Co.....104
Irving Iron Works 89

Jeffrey Manufacturing Co..... 39
Jenkins Bros. 103

Kellogg Co., M. W.....111
Kennedy Valve Mfg. Co., The..102
Kenwood Bridge Co.....113
Kerlow Steel Flooring Co..... 88
Keuffel & Esser Co.....114
Keystone Driller Co.....108
Keystone Gypsum Fireproofing Co. 6
Kiesler Co., Jos F..... 98
King Bridge Co.....112
Kreetan Co..... 86

Lackawanna Bridge Wks. Corp.112
Lackawanna Steel Co..... 26, 27
Laclede Steel Co..... 87
Lakewood Engineering Co..... 99
Lawrence Cement Co..... 90
Lawson & MacMurray 86
Lea-Courtenay Co.....108
Leadite Co., The.....106
Leschen & Sons Rope Co., A.... 96
Leupold, Voelpel & Co.....102
Lidgerwood Mfg. Co..... 95
Lietz Co., A.....114
Linde Air Products Co..... 41
Link-Belt Co..... 98

Page

Littleford Bros. 82, 111
Lock Joint Pipe Co..... 83
Louisville Bridge & Iron Co....113
Ludlow Valve Mfg. Co.....103
Lufkin Rule Co.....116

MacArthur Concrete Pile & Foundation Co..... 91
McGraw-Hill Book Co.....115, 125
McKiernan-Terry Drill Co..... 92
McMyler Interstate Co..... 97
Machold & Riddell.....106
Macon Concrete Roller Co..... 82
Manistee Iron Works Co.....108
Marion Malleable Iron Works... 87
Marion Steam Shovel Co..... 12
Metal Forms Corp..... 82
Michigan Pipe Co.....105
Milburn Co., Alexander..... 91
Milwaukee Bridge Co.....112
Minneapolis Steel & Mchry. Co.112
Mississippi Wire Glass Co..... 88
Mitchell-Tappen Co..... 88
Mogul Products Corp..... 86
Monighan Machine Co..... 94
Morava Construction Co.....112
Morris Machine Works.....108
Mt. Vernon Bridge Co.....112
Mundy Hoisting Eng. Co., J. S.. 14

National Hoisting Engine Co... 93
National Lead Co..... 31
National Steel Fabric Co..... 82
Nat'l Water Main Cleaning Co. 104
Neptune Meter Co.....101
New Bedford Cordage Co..... 98
New England Foundation Co., Inc. 91
Newport Culvert Co., Inc..... 83
New York Blue Print Paper Co.117
N. Y. Con. Jewell & Filt. Co...104
Northwest Engineering Co..... 93
Northwestern Expanded Metal Co. 24
Norton, Inc., A. O.....111

O. K. Clutch & Machry. Co..... 96
Ohio Locomotive Crane Co.... 98
Orton & Steinbrenner Co..... 98
Osgood Co..... 16
Owen Bucket Co..... 99

Pacific Lumber Co., The..... 34
Pacific Tank & Pipe Co.....105
Parsons Co., The..... 96
Parsons, Klapp - Brinckerhoff & Douglas 92
Pawling & Harnischfeger Co... 94
Pease Co., C. F., The.....115
Pelton Walter Wheel Co.....109
Penn Bridge Co. (N. Y.)..... 96
Penn Bridge Co. (Pa.).....113
Pennsylvania Cement Co..... 90
Pennsylvania Salt Mfg. Co.....104
Phoenix Bridge Co., The.....112
Pittsburgh-Des Moines Steel Co.110
Pittsburgh Meter Co.....102
Pittsburgh Shovel Co..... 94
Portable Mchy. Co..... 84
Porter Co., H. K..... 76
Portland Cement Association... 18
Positions Vacant & Wanted.... 58
Powell Co., Wm.....103
Power Specialty Co.....110
Proposals 50
Protexol Corp. 85

Rail Joint Co..... 76
Ramapo Iron Works..... 76
Ransome Concrete Machinery Co. 10
Raymond Concrete Pile Co..... 5
Rensselaer Valve Co.....103
Ridgway & Son Co., Craige..... 77
Riverside Bridge Co.....112
Roberts Filter Mfg. Co.....104
Robertson Co., H. H..... 88
Robins Conveying Belt Co.....109

Page

Roebling's Sons Co., John A.... 93
Ruberoid Co., The.....122
Rust Engineering Co.....110
Ryerson & Son, Jos. T..... 49

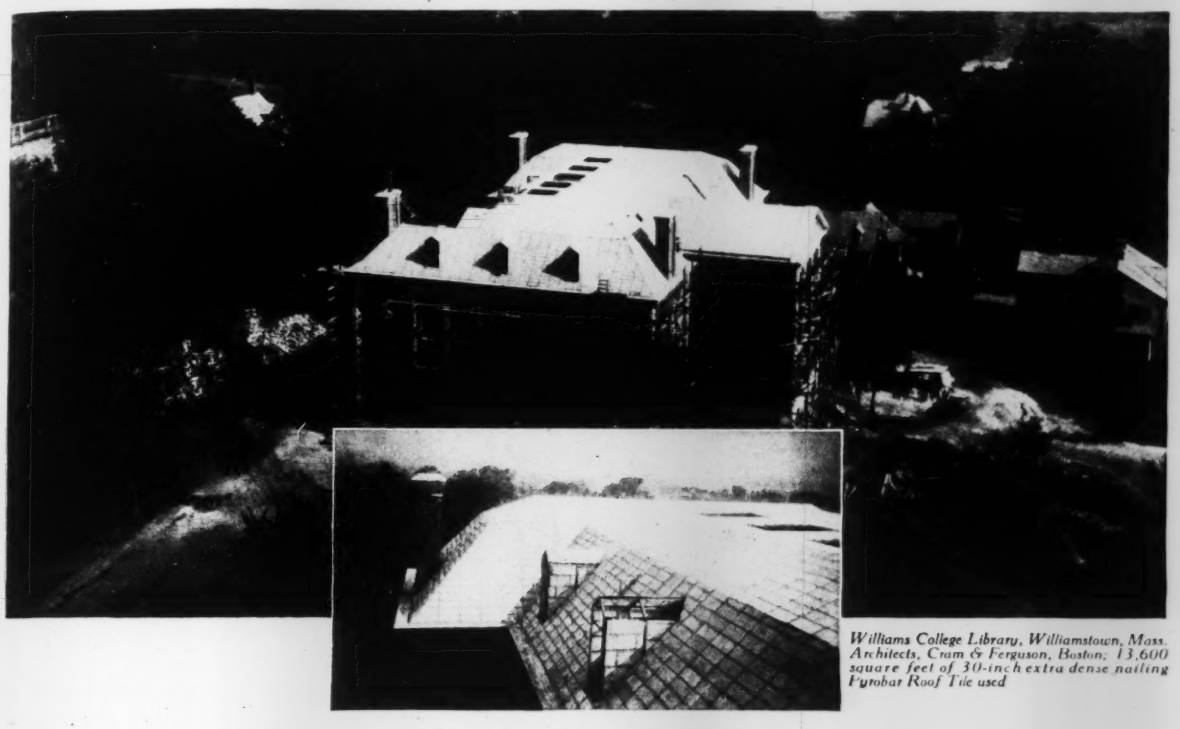
Sauerman Bros. 93
Searchlight Section 50
Shoemaker-Satterthwait Bridge Co. 113
Simplex Valve & Meter Co.....100
Smith, Hauser & MacIssac, Inc. 93
Smith Co., S. Morgan.....106
Smith Mfg. Co., A. P.....102
Snare Corp, Frederick.....113
Snead Architectural Iron Wks..113
Sonneborn Sons, Inc., L..... 89
Southern Wood Preserving Co.. 86
Spencer, White & Prentis, Inc.. 92
Standard Oil Co. of Indiana.... 80
Standard Oil Co. of N. Y..... 82
Standard Scale & Supply Co... 89
Standard Wood Pipe Co.....105
Steele & Condict, Inc.....113
Strauss Bascule Bridge Co.....112
Stroudsburg Engine Works..... 94
Structural Slate Co., The..... 89
Sullivan Machinery Co.....106
Summerhays & Sons, Wm.....111
Superheater Co., The..... 98

Taylor Instrument Cos.....114
Terry Mfg. Co..... 96
Terry & Tench Co., Inc.....113
Texas Company 81
Thew Shovel Co..... 28
Toledo Crane Co..... 98
Traylor Engineering & Mfg. Co. 91
Triest Constracting Corp.....113
Truscon Laboratories, The..... 87
Truscon Steel Co..... 7

Underpinning & Foundation Co. 92
Union Iron Works..... 93
United Concrete Pipe Co..... 84
U. S. Cast Iron Pipe & Fdy. Co.106
U. S. Gypsum Co.....3rd Cover
Universal Clamp Co..... 89
Universal Drafting Mach. Co...117
Universal Road Machinery Co.. 78
Universal Safety Tread Co..... 88

Virginia Bridge & Iron Co.....112
Vulcan Iron Works of Chicago. 93
Vulcan Iron Works, Inc., Jersey City, N. J..... 99
Vulcan Iron Works of Wilkes-Barre 40
Vulcanite Portland Cement Co.. 90

Wallace & Tiernan Co.....104
Want Advertisements..... 58
Waring-Underwood Co., The.... 83
Warren Foundry & Mach. Co...106
Watson Products Corp..... 79
Weber Chimney Co.....111
Weber Co., F..... 116
Webster Mfg. Co..... 38
Wellman-Seaver-Morgan Co., The. 97
Western Wheeled Scraper Co.... 84
Westinghouse Traction Brake Co. 92
Weston, L. A..... 84
Whitcomb Co., Geo. D..... 76
White Co., David 114
Wickes Bros. 117
Wickwire Spencer Steel Corp... 93
Wiederholdt Construction Co...110
Wiley, Glen M..... 96
Williams Co., G. H..... 99
Willsea Works, The..... 90
Wisconsin Bridge & Iron Co....112
Wisconsin Motor Mfg. Co..... 22
Wood & Co., R. D.....102
Wood Hydraulic Hoist & Body Co. 78
Woodward Governor Co.....109
Worthington Pump & Machy Corp. 108
Wyckoff & Son Co., A.....105
Wyckoff Pipe and Creosoting Co., Inc. 86



Williams College Library, Williamstown, Mass. Architects, Cram & Ferguson, Boston; 13,600 square feet of 30-inch extra dense nailing Pyrobar Roof Tile used

U.S. PYROBAR ROOF TILE

Are Easily Erected on Intricate Roof Construction

Pyrobar Roof Tile have made it possible to use ornamental roofs with economy on fireproof buildings.

Pyrobar Roof Tile are light in weight and do not require heavy framing. They are adaptable to roofs of any pitch and are easily and quickly erected. They are fireproof, permanent and low in cost. Tile or slate can be nailed directly to Pyrobar Roof Tile.

There is a type of Pyrobar Roof Tile for every roof design. Our engineering department is at your service for consultation on roof decking problems. Write for bulletins.

UNITED STATES GYPSUM COMPANY

World's Largest Producers of Gypsum Products

General Offices: Dept. J, 205 W. Monroe Street, Chicago, Ill.

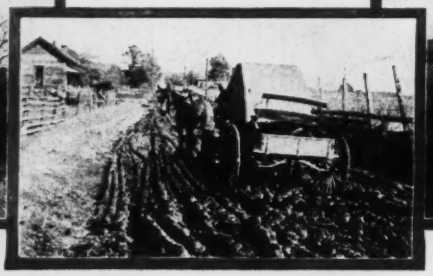
SALES OFFICES

New York, N. Y., Buffalo, N. Y., Boston, Massachusetts, Washington, D. C., Philadelphia, Pennsylvania, Pittsburgh, Pennsylvania, Cleveland, Ohio, Cincinnati, Ohio, Detroit, Mich., Milwaukee, Wis., Minneapolis, Minn., St. Louis, Mo., Kansas City, Mo., Omaha, Neb., Denver, Colo., Los Angeles, California

MINES AND MILLS

Oakfield, N. Y., Plasterco, Va., Cleveland, Ohio, Gypsum, Ohio, Genoa, Ohio, Detroit, Michigan, Alabaster, Mich., Grand Rapids, Mich., Milwaukee, Wis., Fort Dodge, Iowa, Blue Rapids, Kansas, Southard, Okla., Eldorado, Okla., Piedmont, S. D., Loveland, Colo., Denver, Colo., Arden, Nev., Amboy, California

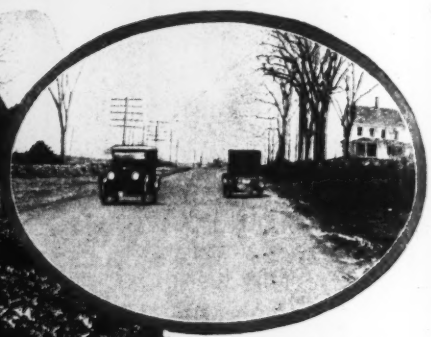
Harvester Road, St. Charles, Mo.
"Tarvia-X," 1920



Typical Spring
condition of
soft-surfaced roads

Carthage-Antwerp Road, N. Y.
Another Tarvia Highway

Glastonbury-Hartford Road,
Glastonbury, Conn. "Tarvia-X," 1915



State Road at Kittery, Me.
"Tarvia-X," 1912

Tarvia transforms old fashioned mud roads into all-year mudless, dustless highways—

PRESIDENT HARDING recently declared that the problem of distribution "is one of the greatest economic problems, if not the greatest problem, of modern civilization."

When we realize that it costs from four to ten times as much to haul a ton of goods over bad roads as it does over good roads, we see at once how vital this road problem is to all of us.

The question no longer should be, "Shall we have good roads?" It should be, instead, "How *quickly* and how *cheaply* can we get good roads?"

The Road Commissioners of hundreds of towns and rural districts throughout the country have found from experience that Tarvia pavements are the most economical good roads it is possible to build.

In first cost a Tarvia road is only slightly more than plain waterbound macadam. The upkeep of Tarvia pavement is, all things considered, so much less than that of any other type of lasting road that the saving—over a short period of years—will offset the original cost of construction.

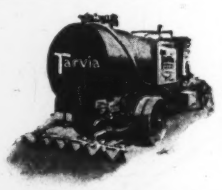
Properly looked after, there is no limit to the life of a Tarvia road. With regular, but inexpensive maintenance, it is actually improved by time and traffic. Its easy-traction surface is smooth, firm, dustless and mudless all the year round—year after year.

Tarvia also offers an economical means of resurfacing old worn-out macadam, and of repairing and maintaining improved streets and highways of every kind. There is a grade of Tarvia for each of these purposes.

Tarvia
For Road Construction
Repair and Maintenance

Special Service Department

This company has a corp of trained engineers and chemists who have given years of study to modern road problems. The advice of these men may be had for the asking by anyone interested. If you will write to the nearest office regarding road problems and conditions in your vicinity, the matter will be given prompt attention.



New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Cincinnati, Pittsburgh
Detroit, New Orleans, Birmingham, Kansas City, Minneapolis, Dallas, Syracuse, Salt Lake City
Peoria, Atlanta, Duluth, Milwaukee, Bangor, Washington, Johnstown, Lebanon
Youngstown, Toledo, Columbus, Richmond, Latrobe, Bethlehem, Elizabeth, Buffalo
Baltimore, Omaha, Jacksonville, Houston, Denver

The Barrett Company

THE BARRETT COMPANY, Limited: Montreal, Toronto, Winnipeg, Vancouver, St. John, N. B., Halifax, N. S.